
Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 38

January-June
1976

AMERICAN HEART ASSOCIATION, INC.



Circulation Research

An Official Journal of the American Heart Association

Circulation Research provides a medium for bringing together basic research on the cardiovascular system from various disciplines including biology, biochemistry, biophysics, morphology, pathology, physiology, and pharmacology. The Journal also will accept for publication manuscripts on clinical research that contribute to an understanding of fundamental problems.

Editor

BRIAN F. HOFFMAN

Associate Editor

MICHAEL R. ROSEN

Editorial Office: Department of Pharmacology, College of Physicians and Surgeons,
630 West 168th Street, New York, New York 10032

EDITORIAL BOARD

ROBERT S. ALEXANDER
ROGER C. BARR
DEREK BERGEL
JOHN A. BEVAN
EDWIN L. BIERMAN
NORMAN BRACHFELD
ALLAN J. BRADY
BARRY M. BRENNER
MICHAEL J. BRODY
F. MERLIN BUMPUS
EDWARD CARMELIET
SHU CHIEN
WILLIAM E. CONNOR
RAMZI S. COTRAN
JAMES W. COVELL
PAUL F. CRANEFIELD
JAMES O. DAVIS
GEORGE I. DRUMMOND
BRIAN R. DULING
DIRK DURRER
ERVIN G. ERDOS
ALFRED P. FISHMAN
RAY W. FULLER

WALTER GAMBLE
JOSEPH P. GILMORE
ANTONIO M. GOTTO, JR.
DONALD B. HACKEL
FRANCIS J. HADDY
LLOYD L. HEFNER
MICHAEL HEYMANN
ROBERT B. JENNINGS
ARNOLD M. KATZ
GLENN A. LANGER
MATTHEW N. LEVY
THOMAS C. LLOYD, JR.
JEAN M. MARSHALL
JOHN C. MCGIFF
N. SCOTT MCNUTT
GORDON K. MOE
NEIL C. MORAN
HOWARD E. MORGAN
RICHARD A. MURPHY
YALE NEMERSON
M. I. M. NOBLE
RAY A. OLSSON

SUZANNE OPARIL
WILLIAM W. PARMLEY
WILLIAM PERL
BERTRAM PITT
OSCAR W. PORTMAN
MARTIN REIVICH
EUGENE M. RENKIN
HARALD REUTER
KIUCHI SAGAWA
HAROLD SANDLER
JAMES SCHEUER
ARNOLD SCHWARTZ
JOHN T. SHEPHERD
BURTON E. SOBEL
MADISON S. SPACH
S. P. SUTERA
MARIO VASSALLE
ANNEMARIE WEBER
JOHN B. WEST
ERICH E. WINDHAGER
SAUL WINEGRAD
ANDREW L. WIT
RICHARD J. WURTMAN

ROBERT M. BERNE; JULIUS H. COMROE, JR., *Consulting Editors*
SIVIA BRODSKY, *Assistant Editor*

Publications Committee, American Heart Association

Stanford Wessler, *Chairman*

William A. Bayless
Neal S. Bricker
Arthur Guyton
Donald Harrison
Brian Hoffman

Thomas N. James
Thomas Killip
David Kritchevsky
Herbert J. Levine
Clark H. Millikan
Lucille E. Notter

Milton C. Paige, Jr.
Richard L. Popp
Abraham Rudolph
Eugene A. Stead, Jr.
Arthur Waltz
Paul Yu

Published monthly at the Publications Office, American Heart Association, 7320 Greenville Avenue, Dallas, Texas 75231. Second class postage paid at Dallas, Texas, and additional mailing offices.

Copyright © 1976 by the American Heart Association, Inc., 7320 Greenville Avenue, Dallas, Texas 75231

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 38

January-June 1976

No. 1 (January)

Editorial: Circulation Research—1976. <i>B. F. Hoffman</i>	1
Serum Dopamine β -Hydroxylase as an Index of Sympathetic Nervous System Activity in Man. <i>Robert H. Noth and Patrick J. Mulrow</i>	2
Transmural Distribution of Myocardial Blood Flow during Systole in the Awake Dog. <i>David S. Hess and Robert J. Bache</i>	5
The Response of Atrial Stretch Receptors to Increases in Heart Rate in Dogs. <i>Irving H. Zucker and Joseph P. Gilmore</i>	15
Effect of Stimulation of Carotid Chemoreceptors on Total and Regional Cerebral Flow. <i>Donald D. Heistad, Melvin L. Marcus, James C. Ehrhardt, and Francois M. Abboud</i>	20
Facilitation of Adrenergic Transmission by Locally Generated Angiotensin II in Rat Mesenteric Arteries. <i>K.U. Malik and A. Nasjletti</i>	26
Renal Cortical Blood Flow in Glycerol-Induced Acute Renal Failure in the Rat. <i>Theodore W. Kurtz, Roy M. Maletz, and Chen H. Hsu</i>	30
Renal Blood Flow and Its Response to Angiotensin II: An Interaction between Oral Contraceptive Agents, Sodium Intake, and the Renin-Angiotensin System in Healthy Young Women. <i>Norman K. Hollenberg, Gordon H. Williams, Bruno Burger, William Chenitz, Iraj Hoosmand, and Douglass F. Adams</i>	35
Atrial Rhythm during Ventricular Fibrillation in the Dog. <i>Allen M. Scher, Robert M. Heethaar, Ariaen N. E. Zimmerman, and Frits L. Meijler</i>	41
Instructions to Authors	46
News from the American Heart Association	49

No. 2 (February)

Brief Reviews: The Concept of Active State in Striated Muscle. <i>Fred J. Julian and Richard L. Moss</i>	53
Distribution of Myocardial Blood Flow in the Exercising Dog with Restricted Coronary Artery Inflow. <i>Robert M. Ball and Robert J. Bache</i>	60
Inhibition of Prostaglandin E ₂ Secretion: Failure to Abolish Autoregulation in the Isolated Dog Kidney. <i>George J. Kaloyanides, Robert E. Ahrens, James A. Shepherd, and Gerald F. DiBona</i>	67
Ventricular Elastic Modulus as a Function of Age in the Syrian Golden Hamster. <i>Richard L. Kane, Thomas A. McMahon, Richard L. Wagner, and Walter H. Abelmann</i>	74
Effect of Vagal Stimulation on the Overflow of Norepinephrine into the Coronary Sinus during Cardiac Sympathetic Nerve Stimulation in the Dog. <i>Matthew N. Levy and Benjamin Blattberg</i>	81
Triggered Activity in Cardiac Muscle Fibers of the Simian Mitral Valve. <i>Andrew L. Wit and Paul F. Cranefield</i>	85
Inhibition of Hypoxic Pulmonary Vasoconstriction by Calcium Antagonists in Isolated Rat Lungs. <i>Ivan F. McMurtry, Allan B. Davidson, John T. Reeves, and Robert F. Grover</i>	99

Contrasting Effects of Hypoglycemia on Plasma Renin Activity and Cyclic Adenosine 3',5'-Monophosphate (Cyclic AMP) in Low Renin and Normal Renin Essential Hypertension.	
<i>Stephen C. Lowder, Pavel Hamet, and Grant W. Liddle</i>	105
Circulating Catecholamine Levels in Human and Experimental Hypertension.	
<i>Jacques de Champlain, Lise Farley, Daniel Cousineau, and Marie-Reine van Ameringen</i>	109
The Effect of Procaine Amide on Components of Excitability in Long Mammalian Cardiac Purkinje Fibers.	
<i>Morton F. Arnsdorf and J. Thomas Bigger, Jr.</i>	115
Evidence for a Physiological Role of Renal Sympathetic Nerves in Adrenergic Stimulation of Renin Release in the Rat.	
<i>Wataru Aoi, David P. Henry, and Myron H. Weinberger</i>	123
News from the American Heart Association	127

No. 3 (March)

Brief Reviews: Cardiovascular and Pulmonary Dynamics by Quantitative Imaging.	
<i>Earl H. Wood</i>	131
Evidence for a Dual Innervation Affecting Local Blood Flow in the Hypothalamus of the Conscious Rabbit.	
<i>Clive Rosendorff, Graham Mitchell, David R.L. Scriven, and Colin Shapiro</i>	140
Electron Microscopic Immunohistochemical Identification of Endothelial Cells in the Rabbit.	
<i>Michael B. Stemerman, Frances A. Pitlick, and Herbert M. Dembitzer</i>	146
The Effects of Tension on Acetylcholinesterase-Induced Transient Depolarizations and Aftercontractions in Canine Myocardial and Purkinje Tissues.	
<i>Gregory R. Ferrier</i>	156
Changes in Cyclic Nucleotide Levels and Contractile Force in the Isolated Hypoxic Rat Heart during Perfusion with Glucagon.	
<i>Ronald W. Busuttil, Richard J. Paddock, James W. Fisher, and William J. George</i>	162
Vascular Responses to Arachidonic Acid in the Perfused Canine Lung.	
<i>Thomas C. Wicks, John C. Rose, Malcolm Johnson, Peter W. Ramwell, and Peter A. Kot</i>	167
Adaptations of the Left Ventricle to Chronic Pressure Overload.	
<i>Shigetake Sasayama, John Ross, Jr., Dean Franklin, Colin M. Bloor, Sanford Bishop, and Ralph B. Dilley</i>	172
Depletion of Cardiac Norepinephrine during Two Forms of Hemolytic Anemia in the Rat.	
<i>John W. Swann and Joseph F. Contrera</i>	179
Renal Tubular Transport of ³H-Digoxin in Saline Diuresis in Rats: Evaluation by Micropuncture.	
<i>Richard J. Roman and Michael L. Kauker</i>	185
Effect of Hindlimb Isolation Procedure on Isogravimetric Capillary Pressure and Transcapillary Fluid Dynamics in Dogs.	
<i>Robert A. Brace and Arthur C. Guyton</i>	192
The Role of Angiotensin in the Canine Renal Vascular Response to Barbiturate Anesthesia.	
<i>Bruno M. Burger, Timothy Hopkins, Allistair Tulloch, and Norman K. Hollenberg</i>	196
The Effect of Lidocaine on Diastolic Transmembrane Currents Determining Pacemaker Depolarization in Cardiac Purkinje Fibers.	
<i>Francis M. Weld and J. Thomas Bigger, Jr.</i>	203
Afferent Neural Pathway in the Regulation of Cardiopulmonary Responses to Tissue Hypermetabolism.	
<i>Chang-seng Liang and William B. Hood, Jr.</i>	209
Letters to the Editor	215
News from the American Heart Association	217

No. 4 (April)

Brief Reviews: Hypoxia on the Pulmonary Circulation: How and Where It Acts.	
<i>Alfred P. Fishman</i>	221
Reflex Suppression of Renin Secretion during Distention of Cardiopulmonary Receptors in Dogs.	
<i>John E. Zehr, James A. Hasbargen, and Kenneth D. Kurz</i>	232

Effects of Activation Sequence on the Local Recovery of Ventricular Excitability in the Dog. <i>J. A. Abildskov</i>	240
The Relationship between Age and Relaxation of Vascular Smooth Muscle in the Rabbit and Rat. <i>Jerome H. Fleisch and Carol S. Hooker</i>	243
Further Characterization of the Natriuretic Factor Derived from Kidney Tissue of Volume-Expanded Rats: Effects on Short-Circuit Current and Sodium-Potassium-Adenosine Triphosphatase Activity. <i>Stanley D. Hillyard, Esther Lu, and Harvey C. Gonick</i>	250
Effect of Thoracic Blood Volume Changes on Steady State Cardiac Output. <i>Wayne Mitzner, Howard Goldberg, and Samuel Lichtenstein</i>	255
Relationships between Pressure and Flow in the Umbilical and Uterine Circulations of the Sheep. <i>William Berman, Jr., Robert C. Goodlin, Michael A. Heymann, and Abraham M. Rudolph</i>	262
The Vascular Basis for Acute Renal Failure in the Rat: Preglomerular and Postglomerular Vasoconstriction. <i>Manjeri A. Venkatachalam, Helmut G. Rennke, and Deborah J. Sandstrom</i>	267
Cardiac Performance in Rats with Renal Hypertension. <i>David B. Averill, Carlos M. Ferrario, Robert C. Tarazi, Subha Sen, and Ron Bajbus</i>	280
Length-Induced Changes in Activation during Contraction: A Study of Mechanical Oscillations in Strontium-Mediated Contractions of Cat and Frog Heart Muscle. <i>Andrew H. Henderson and Martin R. Cattell</i>	289
The Pumping Ability of the Left Heart and the Effect of Coronary Occlusion. <i>Gijs Elzinga and Nicolaas Westerhof</i>	297
Electrophysiological and Antiarrhythmic Effects of Propranolol in Canine Acute Myocardial Ischemia. <i>Joel Kupersmith, Howard Shiang, Robert S. Litwak, and Michael V. Herman</i>	302
Effects on Myocardial Contractility of Blood-Borne Material Released from the Feline Small Intestine in Simulated Shock. <i>Ove Lundgren, Ulf Haglund, Olle Isaksson, and Tetsuo Abe</i>	307
Blood Pressure and Plasma Angiotensin II Concentration after Renal Artery Constriction and Angiotensin Infusion in the Dog: [5-Isoleucine]angiotensin II and Its Breakdown Fragments in Dog Blood. <i>A. M. Caravaggi, G. Bianchi, J. J. Brown, A. F. Lever, J. J. Morton, J. D. Powell-Jackson, J. I. S. Robertson, and P. F. Semple</i>	315
The Role of Arterial Baroreceptors in Mediating the Cardiovascular Response to a Cardiac Glycoside in Conscious Dogs. <i>Robert J. McRitchie and Stephen F. Vatner</i>	321
News from the American Heart Association	327

No. 5 (May)

Brief Reviews: Macromolecules of the Extracellular Compartment of Embryonic and Mature Hearts. <i>Francis J. Manasek</i>	331
Evidence for a Renal α-Adrenergic Receptor Inhibiting Renin Release. <i>William A. Pettinger, T. Kent Keeton, William B. Campbell, and Donald C. Harper</i>	338
Vascular Capacitance and Fluid Shifts in Dogs during Prolonged Hemorrhagic Hypotension. <i>Carl F. Rothe and John A. Drees</i>	347
Atrial Receptors with Nonmedullated Vagal Afferents in the Cat: Discharge Frequency and Pattern in Relation to Atrial Pressure. <i>Peter N. Thorén</i>	357
Electrogenesis of Increased Norepinephrine Sensitivity of Arterial Vascular Muscle in Hypertension. <i>Kent Hermsmeyer</i>	362

The Relationship between Overdrive Suppression and Overdrive Excitation in Ventricular Pacemakers in Dogs. <i>Mario Vassalle, Michael Cummins, Carlos Castro, and Jackson H. Stuckey</i>	367
Abnormal Ion and Water Composition of Veins and Normotensive Arteries in Coarctation Hypertension in Rats. <i>Motilal B. Pamnani and Henry W. Overbeck</i>	375
Role of Resistance and Exchange Vessels in Local Microvascular Control of Skeletal Muscle Oxygenation in the Dog. <i>Harris J. Granger, Anthony H. Goodman, and D. Neil Granger</i>	379
Experimental Evidence for Regional Cardiac Influence in Body Surface Isopotential Maps of Dogs. <i>J. A. Abildskov, Mary Jo Burgess, Robert L. Lux, and Roland F. Wyatt</i>	386
Maintained Stroke Volume but Impaired Arterial Oxygenation in Man at High Altitude with Supplemental CO ₂ . <i>Robert F. Grover, John T. Reeves, John T. Maher, Robert E. McCullough, Julio C. Cruz, Joseph C. Denniston, and Allen Cymerman</i>	391
Mechanical Stimuli Exciting Type A Atrial Vagal Receptors in the Cat. <i>Giorgio Recordati, Federico Lombardi, Vernon S. Bishop, and Alberto Malliani</i>	397
Substructure of Intercellular Junctions in Freeze-Fractured Alveolar-Capillary Membranes of Mouse Lung. <i>Eveline E. Schneeberger and Morris J. Karnovsky</i>	404
Altered Venous Function in Hypertensive Rats. <i>Geza Simon</i>	412
Effects of Acetylsalicylic Acid on the Ductus Arteriosus and Circulation in Fetal Lambs in Utero. <i>Michael A. Heymann and Abraham M. Rudolph</i>	418
Pumping Ability of the Hypertrophying Left Ventricle of the Spontaneously Hypertensive Rat. <i>Marc A. Pfeffer, Janice M. Pfeffer, and Edward D. Frohlich</i>	423
Regional Myocardial Blood Flow during Acute Myocardial Infarction in the Conscious Dog. <i>Sanford P. Bishop, Francis C. White, and Colin M. Bloor</i>	429
Relationship between Blood Flow to Ischemic Regions and Extent of Myocardial Infarction: Serial Measurement of Blood Flow to Ischemic Regions in Dogs. <i>Frank Rivas, Frederick R. Cobb, Robert J. Bache, and Joseph C. Greenfield, Jr.</i>	439
Depression of Atrioventricular Sensitivity in the Dog by Successive Brief Bursts of Vagal Stimulation. <i>Paul Martin</i>	448
Letters to the Editor	454
News from the American Heart Association	456

No. 6 (June)

Brief Reviews: Fatty Acids as Substrates for Heart and Skeletal Muscle. <i>Kenneth L. Zierler</i> ..	459
Combined Effects of Rate, Membrane Potential, and Drugs on Maximum Rate of Rise (\dot{V}_{\max}) of Action Potential Upstroke of Guinea Pig Papillary Muscle. <i>Chia-Maou Chen and Leonard S. Gettes</i>	464
Relation between Plasma Renin Activity, Angiotensin, and Aldosterone and Blood Pressure in Mild Untreated Hypertension. <i>W. Gordon Walker, John S. Horvath, Michael A. Moore, Paul Whelton, and R. Patterson Russell</i>	470
Arterial and Venous Angiotensin II in Normal Subjects: Relation to Plasma Renin Activity and Plasma Aldosterone Concentration, and Response to Posture and Volume Changes. <i>W. Gordon Walker, Michael A. Moore, John S. Horvath, and Paul K. Whelton</i> ...	477
Plasma Renin Activity during Exercise in the Dog. <i>Meyer D. Lifschitz and Lawrence D. Horwitz</i>	483
The Relevance of Peripheral Baroreceptors and Chemoreceptors to Regulation of Cerebral Blood Flow in the Cat. <i>David Bates and Thoralf M. Sundt, Jr.</i>	488
Arterial Lesions in Repeatedly Bred Spontaneously Hypertensive Rats. <i>Bernard C. Wexler, Samuel G. Iams, and Joseph T. Judd</i>	494

Enhanced Aldosterone Response to Angiotensin II in Human Hypertension. <i>E.S. Kisch, R.G. Dluhy, and G.H. Williams</i>	502
The Influence of Combined Intra-aortic Balloon Counterpulsation and Hyperosmotic Mannitol on Regional Myocardial Blood Flow in Ischemic Myocardium in the Dog. <i>John T. Watson, David E. Fixler, Melvin R. Platt, Brent B. Nall, G. Kimble Jett, and James T. Willerson</i>	506
Turbulent Blood Flow in Humans: Its Primary Role in the Production of Ejection Murmurs. <i>Hani N. Sabbah and Paul D. Stein</i>	513
Basal Vascular Tone in the Kidney: Evaluation from the Static Pressure-Flow Relationship under Normal Autoregulation and at Maximal Dilation in the Dog. <i>Rainer Gross, Hartmut Kirchheim, and Kurt Brandstetter</i>	525
The Effects of Altered Sodium Balance and Adrenergic Blockade on Renin Release Induced in Rats by Angiotensin Antagonism. <i>T. Kent Keeton, William A. Pettinger, and William B. Campbell</i>	531
Experimental Myocardial Infarction in the Cat. I. Reversible Decline in Contractility of Non-infarcted Muscle. <i>Peter Mathes, Dietmar Romig, Dieter Sack, and Wolfgang Erhardt</i>	540
Modification of the Flow-Generating Capability of the Canine Heart-Lung Compartment by the Carotid Sinus Baroreceptor Reflex. <i>David P. Kostiuik, Kiichi Sagawa, and Artin A. Shoukas</i>	546
Effects of Chronic Anemia on the Coronary and Coronary Collateral Vasculature in Dogs. <i>Konrad W. Scheel, Daniel A. Brody, Leslie A. Ingram, and Francis Keller</i>	553
Cutaneous and Muscular Vasodilation in the Canine Hindlimb Evoked by Central Stimulation. <i>William J. Lang, Christopher Bell, Elizabeth L. Conway, and Robert Padanyi</i>	560
Regional Cardiac Prostaglandin Release during Myocardial Ischemia in Anesthetized Dogs. <i>Harvey J. Berger, Barry L. Zaret, Leon Speroff, Lawrence S. Cohen, and Steven Wolfson</i> ..	566
Vessel Caliber and Branch-Angle of Human Coronary Artery Branch-Points. <i>Grover M. Hutchins, Martin M. Miner, and John K. Boitnott</i>	572
Books Received	577
News from the American Heart Association	578
Volume Author Index	581
Volume Subject Index	583



AUTHOR INDEX

- Abboud, F.M., 20
 Abe, T., 307
 Abelman, W.H., 74
 Abildskov, J.A., 240, 386
 Adams, D.F., 35
 Ahrens, R.E., 67
 Aoi, W., 123
 Arnsdorf, M.F., 115
 Averill, D.B., 280

 Bache, R.J., 5, 60, 439
 Bajbus, R., 280
 Ball, R.M., 60
 Bates, D., 488
 Bell, C., 560
 Berger, H.J., 566
 Berman, W., Jr., 262
 Bianchi, G., 315
 Bigger, J.T., Jr., 115, 203
 Bishop, S.P., 172, 429
 Bishop, V.S., 397
 Blattberg, B., 81
 Bloor, C.M., 172, 429
 Boitnott, J.K., 572
 Brace, R.A., 192
 Brandstetter, K., 525
 Brody, D.A., 553
 Brown, J.J., 315
 Burger, B.M., 35, 196
 Burgess, M.J., 386
 Busuttil, R.W., 162

 Campbell, W.B., 338, 531
 Caravaggi, A.M., 315
 Caro, C.G., 216
 Castro, C., 367
 Cattell, M.R., 289
 Chen, C.-M., 464
 Chenitz, W., 35
 Cobb, F.R., 439
 Cohen, L.S., 566
 Contrera, J.F., 179
 Conway, E.L., 560
 Cousineau, D., 109
 Crane, P.F., 85
 Cruz, J.C., 391
 Cummins, M., 367
 Cymerman, A., 391

 Davidson, A.B., 99
 de Champlain, J., 109
 Dembitzer, H.M., 146
 Denniston, J.C., 391
 DiBona, G.F., 67
 Dilley, R.B., 172
 Dluhy, R.G., 502
 Drees, J.A., 347

 Ehrhardt, J.C., 20
 Erhardt, W., 540
 Elzinga, G., 297

 Farley, L., 109
 Ferrario, C.M., 280
 Ferrier, G.R., 156
 Fester, A., 454
 Fisher, J.W., 162
 Fishman, A.P., 222
 Fixler, D.E., 506
 Fleisch, J.H., 243
 Franklin, D., 172

 Friedman, M.H., 216
 Frohlich, E.D., 423

 George, W.J., 162
 Gettes, L.S., 464
 Gilmore, J.P., 15
 Glantz, S.A., 454
 Goldberg, H., 255
 Gonick, H.C., 250
 Goodlin, R.C., 262
 Goodman, A.H., 379
 Granger, D.N., 379
 Granger, H.J., 379
 Greenfield, J.C., Jr., 439
 Gross, R., 525
 Grover, R.F., 99, 391
 Guyton, A.C., 192

 Haglund, U., 307
 Hamet, P., 105
 Harper, D.C., 338
 Hasbargen, J.A., 232
 Heethaar, R.M., 41
 Henderson, A.H., 289
 Henry, D.P., 123
 Herman, M.V., 302
 Hermes, K., 362
 Hess, D.S., 5
 Heymann, M.A., 262, 418
 Hillyard, S.D., 250
 Hollenberg, N.K., 35, 196
 Hood, W.B., Jr., 209
 Hooker, C.S., 243
 Hoosmand, I., 35
 Hopkins, T., 196
 Horvath, J.S., 470, 477
 Horwitz, L.D., 483
 Hristad, D.D., 20
 Hsu, C.H., 30
 Hutchins, G.M., 572

 Iams, S.G., 494
 Ingram, L.A., 553
 Isaksson, O., 307

 Jett, G.K., 506
 Johnson, M., 167
 Judd, J.T., 494
 Julian, F.J., 53

 Kaloyanides, G.J., 67
 Kane, R.L., 74
 Karnovsky, M.J., 404
 Kauker, M.L., 185
 Keeton, T.K., 338, 531
 Keller, F., 553
 Kirchheim, H., 525
 Kisch, E.S., 502
 Kostuik, D.P., 546
 Kot, P.A., 167
 Kupersmith, J., 302
 Kurtz, T.W., 30
 Kurz, K.D., 232

 Lang, W.J., 560
 Lever, A.F., 315
 Levy, M.N., 81
 Liang, C.-s., 209
 Lichtenstein, S., 255
 Liddle, G.W., 105
 Lifschitz, M.D., 483
 Litwak, R.S., 302

 Lombardi, F., 397
 Lowder, S.C., 105
 Lu, E., 250
 Lundgren, O., 307
 Lux, R.L., 386

 Maher, J.T., 391
 Maletz, R.M., 30
 Malik, K.U., 26
 Malliani, A., 397
 Manasek, F.J., 331
 Marcus, M.L., 20
 Martin, P., 448
 Mathes, P., 540
 McCullough, R.E., 391
 McMahon, T.A., 74
 McMurtry, I.F., 99
 McRitchie, R.J., 321
 Meijler, F.L., 41
 Miner, M.M., 572
 Mitchell, G., 140
 Mitzner, W., 255
 Moore, M.A., 470, 477
 Morton, J.J., 315
 Moss, R.L., 53
 Mulrow, P.J., 2

 Nall, B.B., 506
 Nasjletti, A., 26
 Nerem, R.M., 216
 Noth, R.H., 2

 Overbeck, H.W., 375

 Padanyi, R., 560
 Paddock, R.J., 162
 Pamnani, M.B., 375
 Pettinger, W.A., 338, 531
 Pfeffer, J.M., 423
 Pfeffer, M.A., 423
 Pitlick, F.A., 146
 Platt, M.R., 506
 Powell-Jackson, J.D., 315

 Ramwell, P.W., 167
 Recordati, G., 397
 Reeves, J.T., 99, 391
 Rennke, H.G., 267
 Rivas, F., 439
 Robertson, J.I.S., 315
 Roman, R.J., 185
 Romig, D., 540
 Rose, J.C., 167
 Rosendorff, C., 140
 Ross, J., Jr., 172
 Rothe, C.F., 347
 Rudolph, A.M., 262, 418
 Russell, R.P., 470

 Sabbah, H.N., 513
 Sack, D., 540
 Sagawa, K., 546
 Sandstrom, D.J., 267
 Sasayama, S., 172
 Scheel, K.W., 553
 Scher, A.M., 41
 Schneeberger, E.E., 404
 Scriven, D.R.L., 140
 Semple, P.F., 315
 Sen, S., 280
 Shapiro, C., 140

- Shepherd, J.A., 67
Shiang, H., 302
Shoukas, A.A., 546
Simon, G., 412
Speroff, L., 566
Stein, P.D., 513
Stemerman, M.B., 146
Stuckey, J.H., 367
Sundt, T.M., Jr., 488
Swann, J.W., 179
Tarazi, R.C., 280
Thorén, P.N., 357
Tulloch, A., 196
van Ameringen, M.-R., 109
Vassalle, M., 367
Vatner, S.F., 321
Venkatachalam, M.A., 267
Wagner, R.L., 74
Walker, W.G., 470, 477
Watson, J.T., 506
Weinberger, M.H., 123
Weld, F.M., 203
Westerhof, N., 297
Wexler, B.C., 494
Whelton, P.K., 470, 477
White, F.C., 429
Wicks, T.C., 167
Willerson, J.T., 506
Williams, G.H., 35, 502
Wit, A.L., 85
Wolfson, S., 566
Wood, E.H., 131
Wyatt, R.F., 386
Zaret, B.L., 566
Zehr, J.E., 232
Zierler, K.L., 459
Zimmerman, A.N.E., 41
Zucker, I.H., 15

SUBJECT INDEX

A

Acetylcholine

- effects on atrioventricular sensitivity (dog), 448
- in centrally stimulated vasodilation (dog), 560
- in study of basal vascular tone in kidney (dog), 525
- role in cardiac norepinephrine release (dog), 81

Acetylsalicylic acid

- blockade, effects on pulmonary vascular response to arachidonic acid (dog), 167
- effects on ductus arteriosus and circulation in fetal lambs in utero, 418

Acetylthiocholine

- transient depolarizations and aftercontractions in myocardial and Purkinje tissues, effect of tension (dog), 156

Action potentials (see Potentials)**Acute renal failure (see Kidney)****Adenosine 3',5'-monophosphate (cyclic AMP)**

- in glucagon-perfused hypoxic heart (rat), 162
- in low renin and normal renin essential hypertension, effects of hypoglycemia, 105

Adenosine triphosphatase

- activity, effects of renal natriuretic factor (rat), 250

Adrenal gland

- response to angiotensin II, in human hypertension, 502

Adrenalectomy

- effects
 - on plasma renin activity, 2
 - on norepinephrine excretion, 2
 - on serum dopamine β -hydroxylase activity, 2

Adrenergic blockade

- effect
 - on angiotensin control of renin release (rat), 531
 - on clonidine suppression of renin release (rat), 338
 - on plasma renin activity during exercise (dog), 483

Adrenergic nerves

- cerebral blood flow control (rabbit), 140

Adrenergic receptors (see Receptors)**Adrenergic stimulation**

- effects on muscle circulation (dog), 379
- of renin release (rat), 123

Adrenergic transmission

- facilitation by angiotensin II in mesenteric arteries (rat), 26

Afferent nerves

- in regulation of cardiopulmonary responses to tissue hypermetabolism (dog), 209

Affercontractions (see Muscle)**After-depolarization**

- mitral valve fibers (monkey), 85

Afterload

- ventricular, effects on steady state cardiac output (dog), 255

Age

- and relaxation of vascular smooth muscle, relationship (rabbit and rat), 243
- effects
 - on pumping ability in hypertension (rat), 423
 - on ventricular elastic modulus (hamster), 74

Aldosterone

- in human hypertension, relation with plasma renin activity and angiotensin, 470
- plasma concentration in normal subjects, relation to angiotensin II and plasma renin activity, and responses to posture and volume changes, 477
- response to angiotensin II in human hypertension, 502

Altitude, high

- effect on stroke volume and arterial oxygenation, 391

Alveolar-capillary membranes

- intercellular junctions, substructure (mouse), 404

AMP (see Adenosine 3',5'-monophosphate)**Anemia**

- cardiac norepinephrine depletion in (rat), 179

- chronic, effects on coronary vasculature (dog), 553

Anesthesia

- barbiturate, renal vascular response, role of angiotensin (dog), 196

Angiotensin (see also Renin-angiotensin system)

- in pulmonary circulation during hypoxia, 221
- role in renal vascular response to barbiturate anesthesia (dog), 196

Angiotensin antagonist

- renin release induced by, effects of altered sodium balance and adrenergic blockade (rat), 531

Angiotensin I

- effect on vasoconstrictor response to sympathetic nerve stimulation and norepinephrine (rat), 26

Angiotensin I-converting enzyme

- SQ 20,881, effect on vasoconstrictor response to sympathetic nerve stimulation and norepinephrine (rat), 26

Angiotensin II

- aldosterone response in human hypertension, 502
- arterial and venous, in normal subjects, relation to plasma renin activity and plasma aldosterone concentration, and response to posture and volume changes, 477
- breakdown fragments (dog), 315
- facilitation of adrenergic transmission in mesenteric arteries (rat), 26
- hypoxic pressor responses (isolated rat lung), 99
- in mild hypertension, relation with plasma renin activity, aldosterone, and blood pressure, 470
- in renal hypertension (dog), 315
- 5-isoleucine form, during renal artery constriction (dog), 315
- reactivity and possible nature (dog), 315
- renal blood flow responses, 35
- 1-Sar,8-Ala-
 - effects on renal vascular response to barbiturates (dog), 196
 - renin release induced by, effects of altered sodium balance and adrenergic blockade (rat), 531
- Sar¹-Ile⁸-, effect on vasoconstrictor response to sympathetic nerve stimulation and norepinephrine (rat), 26
- 5-valine form, during renal artery constriction (dog), 315

Animal models (see Models)**Animal studies (cat)**

- atrial receptors with nonmedullated vagal afferents; discharge frequency and pattern in relation to atrial pressure, 357
- cerebral blood flow regulation, relevance of peripheral baroreceptors and chemoreceptors, 488
- excitation of type A atrial vagal receptors, mechanical stimuli, 397
- length-induced changes in activation during contraction, 289
- pumping ability of left heart, effect of coronary occlusion, 297
- small intestinal shock material, effect on contractility in rabbit and rat, 307
- strontium-mediated contractions, 289

Animal studies (dog)

- acetylthiocholine-induced transient depolarizations and aftercontractions in myocardial and Purkinje tissues, effect of tension, 156
- activation sequence, effects on local recovery of ventricular excitability, 240
- angiotensin, role in renal vascular response to barbiturate anesthesia, 196
- angiotensin II, during renal artery constriction, 315
- arterial baroreceptors, role in mediating cardiovascular response to a cardiac glycoside, 321
- atrial rhythm during ventricular fibrillation, 41
- atrial stretch receptors, responses to increases in heart rate, 5
- atrioventricular sensitivity, depression by vagal stimulation, 448
- basal vascular tone in kidney, evaluation from static pressure-flow relationship, 525
- blood flow in ischemic myocardium, influence of combined intra-aortic balloon counterpulsation and hyperosmotic

- mannitol, 506
- blood pressure, during renal artery constriction, 315
- cardiac output
 - reflex control, 546
 - steady state, effect of thoracic blood volume changes, 255
- carotid chemoreceptor stimulation, effect on total and regional cerebral blood flow, 20
- cerebral blood flow during hypoxemia, effects of chemodenervation, 20
- coronary vasculature, in chronic anemia, 553
- flow-generating capability, modification by carotid sinus baroreceptor reflex, 546
- hindlimb isolation procedure, effect on isogravimetric capillary pressure and transcapillary fluid dynamics, 192
- hypermetabolism, cardiopulmonary responses, role of afferent neural pathway, 209
- isopotential maps, body surface, regional cardiac influence, 386
- myocardial blood flow
 - distribution during exercise and restricted coronary artery inflow, 60
 - during acute infarction, 429
 - regional, and infarction, relationship, 439
 - transmural distribution during systole, 5
- myocardial ischemia, electrophysiological and antiarrhythmic effects of propranolol, 302
- norepinephrine overflow into coronary sinus during cardiac sympathetic nerve stimulation, effect of vagal stimulation, 81
- overdrive suppression and excitation in ventricular pacemakers, 367
- plasma renin activity, during exercise, 483
- pressure overload, left ventricular adaptation to, 172
- prostaglandin release, regional cardiac, during myocardial ischemia, 566
- prostaglandin E₂ secretion, inhibition of, failure to abolish autoregulation in isolated kidney, 67
- renin secretion, reflex suppression during distention of cardiopulmonary receptors, 232
- resistance and exchange vessels, role in local microvascular control of skeletal muscle oxygenation, 379
- vascular capacitance after hemorrhage, 347
- vascular responses to arachidonic acid in perfused lung, 167
- vasodilation, cutaneous and muscular, evoked by central stimulation, 560
- Animal studies (frog)**
 - length-induced changes in activation during contraction, 289
 - natriuretic factor, characteristics, 250
 - strontium-mediated contractions, 289
- Animal studies (guinea pig)**
 - papillary muscle action potential upstroke, combined effects of rate, membrane potential, and drugs on maximum rate of rise, 464
- Animal studies (hamster)**
 - ventricular elastic modulus, as a function of age, 74
- Animal studies (lamb)**
 - fetal, effects of acetylsalicylic acid on ductus arteriosus and circulation, 418
- Animal studies (mammalian)**
 - Purkinje fibers, excitability, effect of procaine amide, 115
- Animal studies (monkey)**
 - cerebral blood flow during hypoxemia, effects of chemodenervation, 20
 - triggered activity in cardiac muscle fibers of mitral valve, 85
- Animal studies (mouse)**
 - lung, substructure of intercellular junctions in alveolar-capillary membranes, 404
- Animal studies (rabbit)**
 - age, and relaxation of vascular smooth muscle, relationship, 243
 - endothelial cells, electron microscopic immunohistochemical identification, 146
 - hypothalamic blood flow, affect of dual innervation, 140
 - papillary muscle contractility, effect of feline intestinal material, 307
- Animal studies (rat)**
 - age, and relaxation of vascular smooth muscle, relationship, 243
 - angiotensin II, facilitation of adrenergic transmission in mesenteric arteries, 26
 - hypertension
 - arterial lesions, 494
 - catecholamine levels, 109
 - coarctation, abnormal ion and water composition of veins and arteries, 375
 - norepinephrine-sensitivity of arterial vascular muscle, electrogenesis, 362
 - pumping ability of hypertrophying left ventricle, 423
 - renal, cardiac performance in, 280
 - venous function, alterations, 404
 - hypoxic heart, changes in cyclic nucleotide levels and contractile force during glucagon perfusion, 162
 - hypoxic pulmonary vasoconstriction, inhibition by calcium antagonists, 99
 - myocardial contractility, effect of feline intestinal "shock" material, 307
 - natriuretic factor from kidney tissue, characterization of, 250
 - norepinephrine depletion, during anemia, 179
 - renal cortical blood flow, in glycerol-induced renal failure, 30
 - renal failure, acute
 - preglomerular and postglomerular vasoconstriction, 267
 - vascular basis, 267
 - renal sympathetic nerves, role in adrenergic stimulation of renin release, 123
 - renal tubular transport of ³H-digoxin in saline diuresis, 185
 - renin release
 - angiotensin control, effects of sodium balance and adrenergic blockade, 531
 - inhibition by a renal α -adrenergic receptor, 338
- Animal studies (sheep)**
 - lidocaine effects on diastolic transmembrane currents determining pacemaker depolarization in cardiac Purkinje fibers, 203
 - pressure-flow relationships between umbilical and uterine circulations, 262
 - Purkinje fiber excitability, effect of procaine amide, 115
- Antiarrhythmic drugs**
 - effects of excitability in Purkinje fibers (sheep), 115
 - electrophysiological effects, in myocardial ischemia (dog), 302
- Antibodies**
 - in identification of endothelial cells (rabbit), 146
- Antihistamine**
 - in centrally stimulated vasodilation (dog), 560
- Aorta**
 - abnormal ion and water composition, in coarctation hypertension (rat), 375
 - balloon counterpulsation and hyperosmotic mannitol, combined, influence on blood flow in ischemic myocardium (dog), 506
 - constriction, effects on left ventricular function (dog), 172
 - relaxation, effects of age (rabbit and rat), 243
- Apoprotein**
 - anti-tissue factor, in identification of endothelial cells (rabbit), 146
- Arachidonic acid**
 - vascular effects in lungs (dog), 167
- Arrhythmias**
 - digitalis-induced, effects of tension (dog), 156
 - effect of triggered activity in mitral valve fibers (monkey), 85
 - overdrive suppression and excitation in (dog), 367
 - Purkinje fibers, procaine amide effects (sheep), 115
- Arrhythmogenesis**
 - Purkinje fibers (sheep), 115
- Arterial baroreceptors (see Receptors)**
- Arterial lesions**
 - in spontaneously hypertensive rats, 494
- Arterial muscle**
 - norepinephrine-sensitivity in hypertension (rat), 362
- Arteriography**
 - coronary artery branch-points, 572
- Arteriosclerosis**
 - in spontaneously hypertensive rats, 494
- Aspirin (see Acetylsalicylic acid)**
- Atrial C fibers**
 - role in cardiovascular control (cat), 357

Atrial receptors (see Receptors)**Atrial rhythm**

during ventricular fibrillation (dog), 41

Atrioventricular conduction

depression by vagal stimulation (dog), 448

during ventricular fibrillation (dog), 41

Atrioventricular junction

in ventricular fibrillation (dog), 41

Atrioventricular sensitivity

depression by vagal stimulation (dog), 448

Atropine

effect

on clonidine suppression of renin release (rat), 338

on placental pressure-flow relationships (sheep), 262

on pulmonary vascular response to arachidonic acid (dog), 167

Atropine methonitrate

in study of centrally stimulated vasodilation (dog), 560

Automaticity

pacemaker, Purkinje fibers, effect of procaine amide (sheep), 115

Autonomic nervous system

role in pulmonary circulation during hypoxia, 221

Autoregulation

cerebral, relevance of peripheral baroreceptors and chemoreceptors (cat), 488

in evaluation of basal vascular tone in kidney (dog), 525

in hypertension, 109

in skeletal muscle oxygenation (dog), 379

prostaglandins and (dog), 566

renal, effects of inhibition of prostaglandin E_2 secretion (dog), 67

B**Balloon counterpulsation** (see Counterpulsation)**Barbiturates**

renal vascular response, role of angiotensin (dog), 196

Baroreceptors (see Receptors)**Blood flow** (see also Pressure-flow relationship)

cardiopulmonary, effect of tissue hypermetabolism (dog), 209

cerebral

effect of stimulation of carotid chemoreceptors (dog), 20

regulation, relevance of peripheral baroreceptors and chemoreceptors (cat), 488

role of adrenergic nerves (rabbit), 140

total and regional, effect of stimulation of carotid chemoreceptors (dog), 20

coronary (see Coronary artery)

hypothalamus, affect of dual innervation (rabbit), 140

myocardial

during exercise with restricted coronary artery inflow (dog), 60

during infarction (dog), 429

regional, in ischemic myocardium, influence of combined intra-aortic balloon counterpulsation and hyperosmotic mannitol (dog), 506

to ischemic regions, and extent of infarction, relationship (dog), 439

tracer microsphere technique (dog), 429

transmural distribution during systole in awake dog, 5

renal

effects of inhibition of prostaglandin E_2 secretion (dog), 67

interaction between oral contraceptives, sodium intake, and renin-angiotensin system, 35

response to barbiturate anesthesia, role of angiotensin (dog), 196

renal cortical, in glycerol-induced renal failure (rat), 30

subendocardial, during systole (dog), 5

turbulent, role in production of ejection murmurs, 513

Blood gases

aspirin effects (fetal lamb), 418

Blood pressure (see also Pressure; and the specific site)

and angiotensin II, during renal artery constriction (dog), 315

in mild untreated hypertension, relationship with plasma renin activity, angiotensin, and aldosterone, 470

Blood volume (see also Volume; Pressure-volume)

effect on atrial C fiber activity (cat), 357

thoracic, effect on steady state cardiac output (dog), 255

BPF 9

effect on renal vascular response to barbiturates (dog), 196

Brain

scanning, 131

Brainstem

stimulation, effects on hypothalamic blood flow (rabbit), 140

Branch-points

coronary artery, vessel caliber and branch-angle of, 572

Burimamide

in centrally stimulated vasodilation (dog), 560

C**Cable analysis**

Purkinje fibers, effect of procaine amide (sheep), 115

Caffeine

effects on length-induced changes in activation during contraction (cat and frog), 289

Calcium

oscillatory response (cat and frog), 209

transmembrane influx, role in hypoxic pulmonary vasoconstriction (rat), 99

Calcium antagonists

inhibition of hypoxic pulmonary vasoconstriction (rat), 99

Capacitance

vascular, and fluid shifts, during prolonged hemorrhagic hypotension (dog), 347

Capillary exchange capacity

and vascular resistance, role in control of skeletal muscle oxygenation (dog), 379

Capillary fluid dynamics

effect of hindlimb isolation procedure (dog), 192

Capillary pressure

isogravimetric, effect of hindlimb isolation procedure (dog), 192

Carbon dioxide

supplemental, effect on stroke volume and arterial oxygenation at high altitude, 391

Cardiac output

aspirin effects (fetal lamb), 418

carotid sinus baroreceptor reflex control (dog), 546

in hypermetabolism, afferent neural regulation (dog), 209

in ventricular hypertrophy and hypertension (rat), 423

steady state, effect of thoracic blood volume changes (dog), 255

Cardiodepressants

from shocked feline small intestine, 307

Cardiopulmonary receptors (see Receptors)**Cardiopulmonary response**

to tissue hypermetabolism, role of afferent neural pathway (dog), 209

Cardiovascular dynamics

quantitative imaging, 131

Cardiovascular response

to cardiac glycoside, role of arterial baroreceptors (dog), 321

to material from shocked feline intestine (rabbit and rat), 307

to prolonged hemorrhagic hypotension (dog), 347

Carotid baroreceptors (see Receptors)**Catecholamines**

adrenal release, effect of cyclic AMP in hypoglycemia, 105

circulating, levels in human and experimental hypertension, 109

effects on mitral valve fiber activity (monkey), 85

excretion, at high altitude, 391

in pulmonary circulation during hypoxia, 221

serum levels, in normotensive subjects, 109

Caudal artery

membrane potential, in hypertension (rat), 362

Central nervous system

stimulation, cutaneous and muscular vasodilation evoked by (dog), 560

Cerebral blood flow (see Blood flow)**Cerebral vessels**

dual innervation, in hypothalamic blood flow control (rabbit), 140

- vasodilation, during hypoxemia, carotid chemoreceptor activity (dog), 20
 - Charge-duration curve**
 - Purkinje fibers, procaine amide effects (sheep), 115
 - Chemoreceptors** (see Receptors)
 - Chlorisondamine**
 - effect on clonidine suppression of renin release (rat), 338
 - Cholesterol**
 - arterial uptake from perfusing serum, self-consistent analysis, 215
 - Circulation**
 - dynamics, quantitative imaging, 131
 - effects of acetylsalicylic acid (fetal lamb), 418
 - Circulatory pressure** (see Pressure)
 - Clonidine**
 - inhibition of renin release, role of renal α -adrenergic receptor (rat), 338
 - Clozapine**
 - effect on clonidine suppression of renin release (rat), 338
 - Collagen**
 - in extracellular compartment of embryonic and mature hearts, 331
 - Compliance**
 - vascular, during hemorrhagic hypotension (dog), 347
 - venous, at high altitude, 391
 - ventricular, effect of age (hamster), 74
 - Computer model**
 - active state of striated muscle, 53
 - Computerized axial tomography**
 - cardiovascular and pulmonary dynamics, 131
 - Conduction**
 - atrioventricular
 - depression by vagal stimulation (dog), 448
 - during ventricular fibrillation (dog), 41
 - Congenital cardiac abnormalities**
 - role of extracellular matrix, 331
 - Contraceptives**
 - oral, effect on renal blood flow response to angiotensin II, 35
 - Contraction**
 - muscular (see Muscle)
 - Coronary artery**
 - branch-points, vessel caliber and branch-angle of, 572
 - disease, prostaglandin release in (dog), 566
 - inflow restriction, effect on myocardial blood flow distribution during exercise (dog), 60
 - ligation, in study of propranolol effects in myocardial ischemia (dog), 302
 - occlusion
 - effect on pumping ability of left heart (cat), 297
 - effect on transmural distribution of myocardial blood flow (dog), 5
 - in sequential measurement of regional myocardial blood flow (dog), 439
 - in study of cardiac prostaglandin release (dog), 566
 - Coronary resistance**
 - and collateral flow, in anemia (dog), 553
 - Coronary sinus**
 - norepinephrine overflow, effect of vagal stimulation and cardiac sympathetic nerve stimulation (dog), 81
 - Coronary vasculature**
 - effects of chronic anemia (dog), 553
 - Corticosterone**
 - levels, in spontaneously hypertensive rats, 494
 - Cortisol**
 - plasma, effects of hypoglycemia in low renin and normal renin essential hypertension, 105
 - Counterpulsation**
 - intra-aortic balloon, and hyperosmotic mannitol, combined influence on regional myocardial blood flow in ischemic myocardium (dog), 506
 - Cranial nerves**
 - role, in cerebral blood flow regulation (cat), 488
 - Creatine phosphokinase**
 - levels, in spontaneously hypertensive rats, 494
 - Creatinine**
 - in acute renal failure (rat), 30
 - Cyproheptadine**
 - effects on pulmonary vascular response to arachidonic acid (dog), 167
- D**
- Depolarization**
 - atrial, during ventricular fibrillation (dog), 41
 - in myocardial and Purkinje tissues, effects of tension and acetylcholine (dog), 156
 - norepinephrine-induced, in hypertension (rat), 362
 - ouabain effects (rat), 362
 - pacemaker, in cardiac Purkinje fibers, effect of lidocaine (sheep), 203
 - Diabetic neuropathy**
 - autonomic, effects on serum dopamine β -hydroxylase activity, 2
 - Digitalis**
 - arrhythmias, effect of tension (dog), 156
 - Digoxin**
 - 3 H-labeled, renal tubular transport in saline diuresis (rat), 185
 - 2,4-Dinitrophenol**
 - effects on cardiopulmonary responses to tissue hypermetabolism (dog), 209
 - Dipyridamole**
 - in study of coronary vasculature in anemia (dog), 553
 - Dopamine β -hydroxylase**
 - serum
 - as index of sympathetic nervous system activity in man, 2
 - effects of adrenalectomy, 2
 - effects of diabetic autonomic neuropathy, 2
 - effects of sodium depletion, 2
 - in low renin essential hypertension, 2
 - plasma renin activity and, 2
 - Ductus arteriosus**
 - anatomy (fetal lamb), 418
 - effects of acetylsalicylic acid (fetal lamb), 418
- E**
- Efferent nerves**
 - effect on type A atrial vagal receptor activity (cat), 397
 - role in pulmonary circulation during hypoxia, 221
 - Ejection murmurs**
 - role in turbulent blood flow, 513
 - Elastic modulus**
 - ventricular, as a function of aging (hamster), 74
 - Elastin**
 - in extracellular compartment of embryonic and mature hearts, 331
 - Electrical activity**
 - pulmonary vessels, during hypoxia, 221
 - Electrocardiography**
 - isopotential maps, cardiac influence (dog), 386
 - propranolol effects in myocardial ischemia (dog), 302
 - Endothelial cells**
 - immunohistochemical identification (rabbit), 146
 - Endothelial junctions**
 - pulmonary, ultrastructure (mouse), 404
 - Epinephrine**
 - effects
 - on length-induced changes in activation during contraction (cat and frog), 289
 - on steady state cardiac output (dog), 255
 - Epithelial junctions**
 - pulmonary, ultrastructure (mouse), 404
 - Ergometrine maleate**
 - in centrally stimulated vasodilation (dog), 560
 - Estrogens**
 - effect on renal blood flow response to angiotensin II, 35
 - Excitability**
 - Purkinje fibers, procaine amide effects (sheep), 115
 - Excitation**
 - overdrive, and overdrive suppression, in ventricular pacemaker

- (dog), 367
 - type A atrial vagal receptors, mechanical stimuli (cat), 397
 - ventricular
 - body surface isopotential maps (dog), 386
 - effects of activation sequence (dog), 240
 - Excitation-contraction coupling**
 - hypoxic pressor response (isolated rat lung), 99
 - Exercise**
 - and restricted coronary inflow, effect on myocardial blood flow distribution (dog), 60
 - plasma renin activity during (dog), 483
 - Extracellular compartment**
 - embryonic and mature hearts, macromolecules of, 331
- F**
- Facial nerves**
 - role in cerebral blood flow regulation (cat), 488
 - Fatty acids**
 - as substrates for heart and skeletal muscle, 459
 - Fetus**
 - acetylsalicylic acid effects on ductus arteriosus and circulation (lamb), 418
 - pressure-flow relationships (sheep), 262
 - Fluid shifts**
 - and vascular capacitance, during prolonged hemorrhagic hypotension (dog), 347
 - Freeze-fracture study**
 - of intercellular junctions in alveolar-capillary membranes (mouse), 404
 - Furosemide**
 - effects on angiotensin II in normal subjects, 477
- G**
- Ganglionectomy**
 - cervical effects on hypothalamic blood flow (rabbit), 140
 - Ganglionic blockade**
 - hemodynamic-renin release correlates (rat), 338
 - Gap junctions**
 - ultrastructural study (mouse), 404
 - Glomerular filtration** (see Kidney)
 - Glucagon**
 - perfusion of hypoxic heart, effects on cyclic nucleotide levels and contractile force (rat), 162
 - Glutamic oxaloacetic transaminase**
 - serum, in spontaneously hypertensive rats, 494
 - Glutamic pyruvic transaminase**
 - serum, in spontaneously hypertensive rats, 494
 - Glycerol**
 - acute renal failure, renal blood flow in (rat), 30
 - Glyceryl trinitrate**
 - in centrally stimulated vasodilation (dog), 560
 - Glycoproteins**
 - in extracellular compartment of embryonic and mature hearts, 331
 - Glycosaminoglycans**
 - in extracellular compartment of embryonic and mature hearts, 331
 - Glycosides**
 - cardiac, cardiovascular response, role of arterial baroreceptors (dog), 321
 - Goldblatt kidney** (see Hypertension, renal)
 - Guanethidine**
 - in study of centrally stimulated vasodilation (dog), 560
 - Guanosine 3',5'-monophosphate (cyclic GMP)**
 - levels, in glucagon-perfused hypoxic heart (rat), 162

H

- Haloperidol**
 - in centrally stimulated vasodilation (dog), 560
- Heart**
 - congenital abnormalities, role of extracellular matrix, 331

- dynamics, quantitative imaging, 131
- ejection murmurs, in turbulent blood flow, 513
- function
 - effects of blood volume changes (dog), 255
 - effects of epinephrine (dog), 255
- hypertrophied (see Hypertrophy)
- muscle (see Muscle; Myocardium)
- norepinephrine depletion during anemia, effects (rat), 179
- performance, in renal hypertension (rat), 280
- pumping ability
 - effect of coronary occlusion (cat), 297
 - source impedance concept (cat), 297
- Heart-lung compartment**
 - flow-generating capability, modification by carotid sinus baroreceptor reflex (dog), 546
- Heart-lung preparation**
 - effects of thoracic blood volume changes on steady state cardiac output (dog), 255
 - model (dog), 255
- Heart rate**
 - atrial stretch receptor responses (dog), 15
- Hemorrhage**
 - vascular capacitance and fluid shifts during (dog), 347
- Hexamethonium bromide**
 - in centrally stimulated vasodilation (dog), 560
- Hindlimb**
 - isolation procedure, effect on isogravimetric capillary pressure and transcapillary fluid dynamics (dog), 192
 - muscle oxygenation, role of resistance and exchange vessels (dog), 379
 - vasodilation, cutaneous and muscular, evoked by central stimulation (dog), 560
- Histamine**
 - effect on drug-induced relaxation of vascular smooth muscle during aging (rabbit and rat), 243
 - in centrally stimulated vasodilation (dog), 560
 - in pulmonary circulation during hypoxia, 221
- Horseradish peroxidase**
 - in identification of endothelial cells (rabbit), 146
- Hydralazine**
 - effects
 - on clonidine suppression of renin release (rat), 338
 - on renin release in sodium-depleted rats, 531
- Hydropenia**
 - renal natriuretic factor, characteristics (rat), 250
- 6-Hydroxydopamine**
 - effects on hypothalamic blood flow (rabbit), 140
- Hydroxyproline**
 - in renal hypertension (rat), 280
- Hyperemia**
 - hypoxemic, in skeletal muscle oxygenation (dog), 379
 - reactive, effect on transmural distribution of myocardial blood flow (dog), 5
- Hyperglycemia**
 - in spontaneously hypertensive rats, 494
- Hyperlipidemia**
 - in spontaneously hypertensive rats, 494
- Hypermetabolism**
 - cardiopulmonary responses, afferent neural regulation (dog), 209
- Hypertension**
 - aldosterone, response to angiotensin II, 502
 - coarctation
 - abnormal ion and water composition of veins and normotensive arteries (rat), 375
 - vascular wall in (rat), 375
 - essential
 - circulating catecholamine levels (human and experimental), 109
 - low renin, effects on serum dopamine β -hydroxylase activity, 2
 - low renin and normal renin, contrasting effects of hypoglycemia on plasma renin activity and cyclic AMP, 105
 - mild untreated, plasma renin activity, angiotensin, aldosterone, and blood pressure in, 470
 - pulmonary, during chronic hypoxia, 221

- renal
 - angiotensin II in (dog), 315
 - cardiac performance in (rat), 280
 - Goldblatt, cardiac performance in (rat), 280
 - hemodynamic changes (rat), 280
- spontaneous
 - arterial lesions (breeder rats), 494
 - ventricular pumping ability (rat), 423
- vascular muscle sensitivity to norepinephrine, electrogenesis (rat), 362
- venous function, alterations (rat), 404
- Hypertrophy**
 - heart performance (dog), 172
 - in renal hypertension (rat), 280
 - myocardial, biochemical characterizations due to renal hypertension (rat), 280
 - ventricular, in hypertension, cardiac pumping ability in (rat), 423
- Hypoglycemia**
 - insulin-induced, effects on plasma renin activity and cyclic AMP in low renin and normal renin essential hypertension, 105
- Hypotension**
 - drug-induced, renin-angiotensin system responses during exercise (dog), 483
 - hemorrhagic, vascular capacitance and fluid shifts during (dog), 347
- Hypothalamus**
 - stimulation, cutaneous and muscular vasodilation evoked by (dog), 560
- Hypoxemia**
 - cerebral blood flow and vasodilation during, carotid chemoreceptor activity (dog), 20
- Hypoxia**
 - arterial, effects of muscle circulation (dog), 379
 - chronic, pulmonary hypertension during, 221
 - fetal, pressure-flow relationships (sheep), 262
 - glucagon perfusion, effects on cardiac cyclic nucleotide levels and contractile force (rat), 162
 - hypobaric, effects on stroke volume and arterial oxygenation, 391
 - on pulmonary circulation, how and where it acts, 221
 - pulmonary vasoconstriction
 - inhibition by calcium antagonists (rat), 99
 - mechanisms and sites, 221
- I**
- Imaging**
 - cardiovascular and pulmonary dynamics, 131
 - whole body scanning, 131
- Immunohistochemical studies**
 - endothelial cells, identification (rabbit), 146
- Indomethacin**
 - in centrally stimulated vasodilation (dog), 560
 - prostaglandin suppression, effect on renal autoregulation (dog), 67
- Infarction**
 - myocardial
 - acute, regional myocardial blood flow during (dog), 429
 - and blood flow to ischemic regions, relationship (dog), 439
 - histopathology (dog), 429
 - pumping ability of heart (cat), 297
- Inotropic interventions**
 - in study of type A atrial vagal receptor activity (cat), 397
- Insulin**
 - hypoglycemia (see Hypoglycemia)
- Inulin**
 - ¹⁴C-labeled, renal tubular transport in saline diuresis (rat), 185
- Ion composition**
 - of veins and arteries, in coarctation hypertension (rat), 375
- Ion transport**
 - electrogenic, in hypertension (rat), 362
- Ischemia**
 - myocardial
 - acute, electrophysiological and antiarrhythmic effects of propranolol (dog), 302
 - effect of combined intra-aortic balloon counterpulsation and hyperosmotic mannitol on blood flow (dog), 506
 - regional cardiac prostaglandin release (dog), 566
 - relationship of blood flow and extent of infarction (dog), 439
- Isogravimetric capillary pressure**
 - effect of hindlimb isolation procedure (dog), 192
- 5-Isoleucine angiotensin II** (see Angiotensin II)
- Isopotential maps**
 - body surface, regional cardiac influence (dog), 386
- Isoproterenol**
 - effect on relaxation of vascular smooth muscle during aging (rabbit and rat), 243
 - in centrally stimulated vasodilation (dog), 560
- Isotopes** (see Radionuclide studies)
- J**
- Juxtaglomerular apparatus** (see Kidney)
- K**
- Ketamine**
 - effects on clonidine suppression of renin release (rat), 338
- Kidney**
 - acute renal failure
 - creatinine in (rat), 30
 - glycerol-induced, effect on renal cortical blood flow (rat), 30
 - myohemoglobinuric, vascular basis (rat), 267
 - preglomerular and postglomerular vasoconstriction (rat), 267
 - vascular basis (rat), 267
 - autoregulation (see Autoregulation)
 - basal vascular tone, evaluation from static pressure-flow relationship under normal autoregulation and at maximal dilation (dog), 525
 - blood flow (see Blood flow)
 - glomerular filtration rate
 - effects of inhibition of prostaglandin E₂ secretion (dog), 67
 - effects of renal natriuretic factor (rat), 250
 - ³H-digoxin, tubular transport, in saline diuresis (rat), 185
 - juxtaglomerular apparatus, role in renin release, 123
 - natriuretic factor
 - characterization of (rat), 250
 - effects on short-circuit current and sodium-potassium-ATPase activity (volume-expanded rat), 250
 - renin secretion (see Renin)
 - vascular response to barbiturate anesthesia, role of angiotensin (dog), 196
- L**
- Lactic dehydrogenase**
 - levels in spontaneously hypertensive rats, 494
- Laplace law**
 - in study of ventricular elastic modulus as a function of age (hamster), 74
- Lidocaine**
 - effects
 - on diastolic transmembrane currents determining pacemaker depolarization in cardiac Purkinje fibers (sheep), 203
 - on excitability in Purkinje fibers (sheep), 115
 - on papillary muscle action potential upstroke (guinea pig), 464
- Linoleic acid**
 - vascular effects in lungs (dog), 167
- Lungs**
 - dynamics, quantitative imaging, 131
 - hypoxic vasoconstriction, inhibition by calcium antagonists (rat), 99
 - intercellular junctions in alveolar-capillary membranes, substructure (mouse), 404
 - membrane permeability, ultrastructural study (mouse), 404
 - vascular effects of arachidonic acid (dog), 167
 - ventilation, in hypermetabolism, afferent neural regulation (dog), 209
- M**
- Mannitol**
 - hyperosmotic, and intra-aortic balloon counterpulsation, com-

- bined influence on blood flow in ischemic myocardium (dog), 506
Mechanoreceptors (see Receptors)
Meclofenamate
 hypoxic pressor responses (isolated rat lung), 99
 prostaglandin suppression, effect on renal autoregulation (dog), 67
Membrane permeability
 lungs, ultrastructural study (mouse), 404
Membrane potentials (see Potentials)
Mepyramine maleate
 in centrally stimulated vasodilation (dog), 560
Mesenteric arteries
 angiotensin II effects on vasoconstrictor response (rat), 26
Methoxamine
 effect, on clonidine suppression of renin release (rat), 338
Micropuncture studies
 renal tubular transport of ³H-digoxin in saline diuresis (rat), 185
Microspheres (see Radionuclide studies)
Microvascular control
 of skeletal muscle oxygenation (dog), 379
Mitral valve fibers
 triggered activity (monkey), 85
Models
 computer, active state of striated muscle, 53
 heart-lung preparation (dog), 255
 isolated heart perfusion system (dog), 553
 isolated ejecting cat heart preparation, 297
Monoamine oxidase inhibitor
 effects on renin release (rat), 123
Muscarinic receptors
 role in cardiac norepinephrine release (dog), 81
Muscle
 cardiac
 acetylcholinesterase-induced depolarizations and aftercontractions in myocardial and Purkinje tissues, effect of tension (dog), 156
 activation, length-induced changes during contraction (cat and frog), 289
 contractile force, in glucagon-perfused hypoxic heart (rat), 162
 contractile force, ventricular, and norepinephrine overflow, effects of vagal and sympathetic nerve stimulation (dog), 81
 contractility, myocardial, effect of feline small intestinal "shock" material (rabbit and rat), 307
 contraction, atrial, isovolumic, effect on receptor activity (cat), 397
 contraction, strontium-mediated, mechanical oscillations in (cat and frog), 289
 contractures, Sr- or Ca-mediated, oscillatory response (cat and frog), 209
 fatty acids as substrates, 459
 triggered activity, mitral valve fibers (monkey), 85
 papillary
 action potential upstroke, combined effects of rate, membrane potential, and drugs on maximum rate of rise (guinea pig), 464
 contractility, effect of material from feline shocked intestine (rabbit), 307
 skeletal
 circulation, local control, role of resistance and exchange vessels (dog), 379
 fatty acids as substrates, 459
 stiffness (see Stiffness)
 striated
 active state, concept of, 53
 behavior, computer models, 53
 contractile mechanisms, 53
 vascular
 contractility, age-related changes (rabbit and rat), 243
 norepinephrine-sensitivity in hypertension (rat), 362
 vascular, pulmonary, contractility, metabolic effects during hypoxia, 221
Myocardium (see also Muscle, cardiac)
 blood flow (see Blood flow)
 circulatory perfusion, roentgen scanning densitometry, 131
 hypertrophied (see Hypertrophy)
 ischemic (see Ischemia)
Myohemoglobinuria
 acute renal failure, vascular basis (rat), 267
- N**
- Natriuretic factor**
 kidney tissue
 characterization of (rat), 250
 effects on short-circuit current and sodium-potassium-ATPase activity (volume-expanded rat), 250
Neurotransmission
 modulation, angiotensin II in, 26
Nicotine
 carotid chemoreceptor stimulation, effect on cerebral blood flow (dog), 20
Nitroglycerin
 effect on relaxation of vascular smooth muscle during aging (rabbit and rat), 243
Noradrenergic nerves
 role in hypothalamic blood flow control (rabbit), 140
Norepinephrine
 arterial muscle sensitivity to, in hypertension (rat), 362
 cardiac depletion during hemolytic anemia (rat), 179
 cardiac overflow into coronary sinus during sympathetic nerve stimulation (dog), 81
 depolarization by (rat), 362
 excretion, in study of serum dopamine β -hydroxylase as an index of sympathetic nervous system activity, 2
 vascular effects in lungs (dog), 167
 vasoconstrictor response, effect of angiotensin II (rat), 26
Nucleotides
 cyclic, levels in glucagon-perfused hypoxic heart (rat), 162
- O**
- Ouabain**
 cardiovascular response, role of arterial baroreceptors (dog), 321
 effect on depolarization (rat), 362
Overdrive
 suppression and excitation in ventricular pacemakers (dog), 367
Oxygen
 consumption, during tissue hypermetabolism (dog), 209
Oxygenation
 arterial, at high altitude, 391
 skeletal muscle, microvascular control (dog), 379
- P**
- P113** (see Angiotensin II; Saralasin)
Pacemaker
 automaticity, Purkinje fibers, effect of procaine amide (sheep), 115
 currents, in cardiac Purkinje fibers, lidocaine effects (sheep), 203
 ventricular, overdrive suppression and excitation (dog), 367
Papillary muscle (see Muscle)
Papavarine
 in study of basal vascular tone in kidney (dog), 525
Pentolinium
 effects on plasma renin activity during exercise (dog), 483
Perfusion pressure (see Pressure, perfusion)
Peroxidase
 horseradish, with anti-tissue factor, in identification of endothelial cells (rabbit), 146
Pheniprazine
 effects on renin release (rat), 123
Phenoxybenzamine
 effect
 on clonidine suppression of renin release (rat), 338
 on renal vascular response to barbiturates (dog), 198
Phentolamine
 effects
 on clonidine suppression of renin release (rat), 338

- on pulmonary vascular response to arachidonic acid (dog), 167
 - on renal vascular response to barbiturates (dog), 196
 - on renin release (rat), 123
 - renin release induced by, effects of saralasin (rat), 531
 - Phenylhydrazine**
 - anemia, cardiac effects (rat), 179
 - Phosphodiesterase inhibitors**
 - effects on plasma renin activity during hypoglycemia in low renin and normal renin essential hypertension, 105
 - Placenta**
 - pressure-flow relationships (sheep), 262
 - Plasma**
 - colloid osmotic pressure, effect of hindlimb isolation procedure (dog), 192
 - renin activity (see Renin)
 - volume, at high altitude, 391
 - Pneumocytes**
 - ultrastructure (mouse), 404
 - Portal vein**
 - abnormal ion and water composition in coarctation hypertension (rat), 375
 - relaxation, effect of aging (rabbit and rat), 243
 - Posture**
 - effects on angiotensin II in normal subjects, 477
 - renin-angiotensin system responses (dog), 483
 - Potassium**
 - activity, effects of renal natriuretic factor (rat), 250
 - composition, of veins and normotensive arteries in coarctation hypertension (rat), 375
 - contractures induced by, oscillatory responses (cat and frog), 209
 - effects on membrane potential in hypertension (rat), 362
 - pacemaker current, lidocaine effects (sheep), 203
 - Potassium chloride**
 - effect on drug-induced relaxation of vascular smooth muscle during aging (rabbit and rat), 243
 - Potentials**
 - action
 - in myocardial ischemia, effect of propranolol (dog), 302
 - papillary muscle, combined effects of rate, membrane potential, and drugs on maximum rate of rise of upstroke (guinea pig), 464
 - triggered, in mitral valve fibers (monkey), 85
 - body surface isopotential maps, regional cardiac influence (dog), 386
 - effects of renal natriuretic factor (cat), 250
 - membrane, altered basis in hypertension (rat), 362
 - resting, effect on maximum rate of rise of papillary muscle action potential upstroke (guinea pig), 464
 - transmembrane, acetylcholinesterase-induced, effects of tension (dog), 156
 - Pressor response**
 - potentiation, in mesenteric artery (rat), 26
 - pulmonary, in hypoxia, 221
 - to alveolar hypoxia, effect of calcium antagonists (rat), 99
 - to angiotensin II, in hypertension, 502
 - Pressure** (see also Blood pressure)
 - aortic-atrial, modification by carotid sinus baroreceptor reflex (dog), 546
 - arterial, aspirin effects (fetal lamb), 418
 - atrial
 - effect on atrial receptor response (cat), 357
 - in renal hypertension (rat), 280
 - role of stretch receptors, 15
 - atrial and ventricular, in study of pumping ability of heart (cat), 297
 - chronic overload, effects on left ventricular function (dog), 172
 - circulatory, during prolonged hemorrhagic hypotension (dog), 347
 - gradients, in steady state cardiac output (dog), 255
 - isogravimetric capillary, effect of hindlimb isolation procedure (dog), 192
 - perfusion
 - effects on muscle circulation (dog), 379
 - in study of cerebral blood flow regulation (cat), 488
 - systemic, in steady state cardiac output (dog), 255
 - ventricular, in renal hypertension (rat), 280
 - Pressure-flow relationships**
 - heart-lung compartment, carotid sinus baroreceptor reflex control (dog), 546
 - in umbilical and uterine circulations (sheep), 262
 - static, in evaluation of basal vascular tone in kidney (dog), 525
 - Pressure-volume relationship**
 - in prolonged hemorrhagic hypotension (dog), 347
 - ventricular
 - effect of age (hamster), 74
 - in computing muscle stiffness, 454
 - venous, in hypertension (rat), 412
 - Procaine amide**
 - effect on components of excitability in cardiac Purkinje fibers (mammalian; sheep), 115
 - Progestins**
 - effect on renal blood flow response to angiotensin II, 35
 - Propranolol**
 - effects
 - on hypothalamic blood flow (rabbit), 140
 - on plasma renin activity during exercise (dog), 483
 - on pulmonary vascular response to arachidonic acid (dog), 167
 - on renin activity in sodium-depleted rat, 338
 - on renin release (rat), 123
 - on saralasin-induced renin release (rat), 531
 - on type A atrial vagal receptor activity (cat), 397
 - electrophysiological and antiarrhythmic effects in acute myocardial ischemia (dog), 302
 - in centrally stimulated vasodilation (dog), 560
 - Prostaglandin**
 - cardiac, release during myocardial ischemia (dog), 566
 - in pulmonary circulation during hypoxia, 221
 - Prostaglandin E₁**
 - blood flow regulation through ductus arteriosus (fetal lamb), 418
 - Prostaglandin E₂**
 - secretion, inhibition of, effect on autoregulation in isolated kidney (dog), 67
 - Prostaglandin F_{2α}**
 - hypoxic pressor responses (isolated rat lung), 99
 - vascular effects in lungs (dog), 167
 - Prostaglandin precursor**
 - effects on pulmonary vascular response to arachidonic acid (dog), 167
 - Prostaglandin synthetase inhibitor**
 - effects
 - on pulmonary vascular response to arachidonic acid (dog), 167
 - on renal autoregulation (dog), 67
 - Pulmonary arteries**
 - blood pressure, aspirin effects (fetal lamb), 418
 - efferent motor control during hypoxia, 221
 - relaxation, effect of aging (rabbit and rat), 243
 - Pulmonary circulation**
 - during hypoxia, 221
 - Pulmonary dynamics**
 - quantitative imaging, 131
 - Pulmonary hypertension** (see Hypertension)
 - Pulmonary vasoconstriction** (see Vasoconstriction)
 - Pulmonary vessels**
 - during hypoxia, 221
 - Pumping ability**
 - of hypertrophying left ventricle in hypertension (rat), 423
 - Purkinje fibers**
 - acetylcholinesterase-induced transient depolarizations and aftercontractions, effects of tension (dog), 156
 - lidocaine effects on diastolic transmembrane currents determining pacemaker depolarization (sheep), 203
 - procaine amide effects on components of excitability (mammalian; sheep), 115
- Q**
- Quinidine**
 - effects on papillary muscle action potential upstroke (guinea pig), 464

R

Radionuclide studies (see also specific tracer or labeled substance)

- acetylsalicylic acid effects on ductus arteriosus and circulation (fetal lamb), 418
- cerebral blood flow
 - effect of carotid chemoreceptor stimulation (dog), 20
 - regulation, relevance of peripheral baroreceptors and chemoreceptors (cat), 488
- computerized axial tomography of cardiovascular and pulmonary dynamics, 131
- counterpulsation and mannitol, combined effects on blood flow in ischemic myocardium (dog), 506
- hypothalamic blood flow (rabbit), 140
- imaging
 - cardiovascular and pulmonary dynamics, 131
 - whole body scanning, 131
- myocardial blood flow
 - during acute infarction (dog), 429
 - during exercise and restricted coronary artery inflow (dog), 60
 - to ischemic regions, serial measurements (dog), 439
 - transmural distribution during systole in awake dog, 5
- renal blood flow, responses to angiotensin II, 35
- vascular capacitance after hemorrhage (dog), 347

Receptors

- α -adrenergic
 - in hypothalamic blood flow control (rabbit), 140
 - renal, in inhibition of renin release (rat), 338
- β -adrenergic
 - in hypothalamic blood flow control (rabbit), 140
 - responsiveness during hypoglycemia in patients with low and normal renin essential hypertension, 105
- arterial baroreceptors, role in mediating cardiovascular response to a cardiac glycoside (dog), 321
- atrial
 - type A, excitation, mechanical stimuli (cat), 397
 - type B, discharge characteristics, 15
 - with nonmedullated vagal afferents; discharge frequency and pattern in relation to atrial pressure (cat), 357
- atrial-pulmonary, distention, renin secretion during (dog), 232
- atrial stretch, responses to increases in heart rate (dog), 15
- atrioventricular, stimulation, in depression of AV sensitivity (dog), 448
- cardiopulmonary, distention, reflex suppression of renin secretion during (dog), 232
- carotid chemoreceptors, stimulation, effect on cerebral blood flow (dog), 20
- carotid sinus baroreceptor reflex modification of flow-generation of heart-lung compartment (dog), 546
- muscarinic, role in cardiac norepinephrine release (dog), 81
- peripheral baroreceptors and chemoreceptors, relevance in regulation of cerebral blood flow (cat), 488

Refractory period

- in myocardial ischemia, effect of propranolol (dog), 302
- ventricular, effects of activation (dog), 240

Renal artery

- constriction, effect on blood pressure and angiotensin II (dog), 315

Renal blood flow (see Blood flow)**Renal tubules** (see Kidney)**Renin**

- plasma, activity (PRA)
 - during exercise (dog), 483
 - during renal artery constriction (dog), 315
 - effects of adrenalectomy, 2
 - effects of sodium depletion 2
 - in low renin and normal renin essential hypertension, contrasting effects of hypoglycemia, 105
 - in mild hypertension, relation with angiotensin, aldosterone, and blood pressure, 470
 - in normal subjects, relation to angiotensin II and aldosterone, and response to posture and volume changes, 477
 - in study of serum dopamine β -hydroxylase activity, 2
- release

- and hemodynamics, correlation, during ganglionic blockade (rat), 338
- clonidine effects (rat), 338
- inhibition by renal α -adrenergic receptor (rat), 338
- phenolamine-induced, effects of saralasin (rat), 531
- physiological role of renal sympathetic nerves in adrenergic stimulation of, (rat), 123
- propranolol effects (rat), 123
- saralasin-induced, effects of sodium balance and adrenergic blockade (rat), 531
- tyramine effects (rat), 123
- secretion, reflex suppression during distention of cardiopulmonary receptors (dog), 232

Renin-angiotensin system

- during exercise (dog), 483
- in renal blood flow, 35
- in renal vascular response to barbiturates (dog), 196

Renin substrate

- effects of oral contraceptives, 35
- effects on vasoconstrictor response to sympathetic nerve stimulation and norepinephrine (rat), 26

Resistance

- and capillary exchange, role in microvascular control of skeletal muscle oxygenation (dog), 379
- coronary, in anemia (dog), 553

Rhythmic activity

- triggered, in mitral valve fibers (monkey), 85

S

Saline

- diuresis, in renal tubular transport of ^3H -digoxin (rat), 185
- effect on atrial receptor activity (cat), 397

1-Sar-8-Ala-angiotensin II (see Angiotensin II)**Sar¹-Ile⁸-angiotensin II** (see Angiotensin II)**Saralasin** (see also Angiotensin II; Angiotensin antagonists)

- effects on phenolamine-induced renin release (rat), 531
- hypoxic pressor responses (isolated rat lung), 99
- Scanning (see Imaging; Radionuclide studies)

Shock

- intestinal, effect on myocardial contractility (rabbit and rat), 307

Short-circuit current

- effects of renal natriuretic factor (rat and frog), 250

SHR (see hypertension, spontaneous)**Skeletal muscle** (see Muscle)**SKF 525 A**

- hypoxic pressor responses (isolated rat lung), 99

Skin

- vasodilation, evoked by central stimulation (dog), 560

Sodium

- balance
 - effect on angiotensin control of renin release (rat), 531
 - renal blood flow response to angiotensin II, 35
- composition, in veins and normotensive arteries in coarctation hypertension (rat), 375
- deficiency, vascular effects in acute renal failure (rat), 267
- depletion
 - effects on clonidine and propranolol inhibition of renin release (rat), 338
- in study of serum dopamine β -hydroxylase as index of sympathetic nervous system activity, 2
- excretion
 - and transport, effects of renal natriuretic factor (rat), 250
 - in mild untreated hypertension, 470
- intake, effects on angiotensin II in normal subjects, 477

Sodium nitrite

- effect on relaxation of vascular smooth muscle during aging (rabbit and rat), 243

Sodium-potassium-ATPase

- activity, effects of renal natriuretic factor (rat), 250

Sodium-potassium pump

- effect on papillary muscle action potential upstroke (guinea pig), 464

Sound energy density

- and turbulent energy density, in ejection murmurs, 513
- SQ 20,881** (see Angiotensin I-converting enzyme)
- Starling curve**
 - modification by carotid sinus baroreceptor reflex (dog), 546
- Steady state**
 - cardiac output, effect of thoracic blood volume changes (dog), 255
- Stellate ganglion**
 - role in atrial receptor activity (cat), 397
- Stiffness**
 - muscle, computing from ventricular pressure-volume curve, 454
 - vascular, in prolonged hemorrhagic hypotension (dog), 347
 - ventricular effect of age (hamster), 74
- Strength-duration curves**
 - Purkinje fibers, procaine amide effects, 115
- Stroke volume**
 - and arterial oxygenation, at high altitude with supplemental CO₂, 391
 - effects of ventricular hypertrophy and hypertension (rat), 423
 - in renal hypertension (rat), 280
- Strontium**
 - heart muscle contractions mediated by (cat and frog), 289
- Strophanthin-G** (see Ouabain)
- Subendocardial blood flow**
 - during systole (dog), 5
- Subendocardial perfusion**
 - during exercise with restricted coronary artery inflow (dog), 60
- Sympathectomy**
 - cervical, effects on hypothalamic blood flow (rabbit), 140
 - hypothalamic, effects on blood flow (rabbit), 140
- Sympathetic denervation**
 - effect, on type A atrial receptor activity (cat), 397
- Sympathetic nerves**
 - renal, role in adrenergic stimulation of renin release (rat), 123
 - stimulation
 - effect on norepinephrine overflow into coronary sinus (dog), 81
 - vasoconstrictor response, effect of angiotensin II (rat), 26
- Sympathetic nervous system**
 - activity, serum dopamine β -hydroxylase activity as an index of, 2
 - in anemia (rat), 179
 - in maintaining elevated blood pressure in hypertension, 109
 - in plasma renin activity during exercise (dog), 483
 - in renin secretion (dog), 232
- Sympathetic neuron blockade**
 - effect on clonidine suppression of renin release (rat), 338
- Systole**
 - ejection murmurs, turbulent blood flow in, 513
- Systole**
 - myocardial blood flow, transmural distribution in awake dog, 5
- Systolic discharge**
 - of type A atrial vagal receptors (cat), 397

T

- Tachycardia**
 - atrial, receptor discharge in (dog), 15
- Tension**
 - effects on acetylcholinesterase-induced transient depolarizations and aftercontractions in myocardial and Purkinje tissues (dog), 156
 - in digitalis arrhythmias (dog), 156
- Tetrodotoxin**
 - effects on mitral valve fiber activity (monkey), 85
- Theophylline**
 - effects
 - on plasma renin activity during hypoglycemia in patients with low renin and normal renin essential hypertension, 105
 - on renin release (rat), 123
- Thoracic blood volume**
 - effect on steady state cardiac output (dog), 255
- Tomography** (see Computerized axial tomography)
- Tracer studies** (see Radionuclide studies)
- Transmembrane potentials** (see Potentials)
- Triggered activity**
 - in cardiac muscle fibers of mitral valve (monkey), 85

Tropocollagen

- in extracellular compartment of embryonic and mature hearts, 331

Turbulent blood flow (see Blood flow)

Tyramine

- effects on renin release (rat), 123
- vasoconstriction mechanism, in hypothalamic blood flow control (rabbit), 140

U

Umbilical circulation

- and uterine circulation, pressure-flow relationships (sheep), 262

Urine

- flow, effects of renal natriuretic factor (rat), 250

Uterus

- circulation, pressure-flow relationships (sheep), 262

V

Vagal receptors (see Receptors)

Vagus nerve

- atrial stretch receptor response to increases in heart rate (dog), 15
- in reflex control of cardiac output (dog), 546
- stimulation
 - effect on norepinephrine overflow into coronary sinus during cardiac sympathetic nerve stimulation (dog), 81
 - effect on type A atrial receptor activity (cat), 397
 - in depression of atrioventricular sensitivity (dog), 448

5-Vaiine angiotensin II (see Angiotensin II)

Vascular capacitance

- and fluid shifts, during prolonged hemorrhagic hypotension (dog), 347

Vascular muscle (see Muscle)

Vascular resistance (see Resistance)

Vascular stiffness (see Stiffness)

Vascular tone

- basal, in kidney, evaluation from static pressure-flow relationship, 525

Vascular wall

- in hypertension (rat), 375

Vasoconstriction

- mesenteric arteries, effect of angiotensin II (rat), 26
- preglomerular and postglomerular in acute renal failure (rat), 267
- pulmonary
 - during hypoxia, inhibition by calcium antagonists (rat), 99
 - during hypoxia, mechanisms and sites, 221
 - effects of arachidonic acid (dog), 167

Vasodilation

- cerebral, during hypoxemia, carotid chemoreceptor activity (dog), 20
- cutaneous and muscular, evoked by central stimulation (dog), 560
- in evaluation of basal vascular tone in kidney (dog), 525

Vena cava

- abnormal ion and water composition in coarctation hypertension (rat), 375
- occlusion, effect on atrial receptor activity (cat), 397

Venography

- rapid sequence, in hypertension (rat), 412

Venous function

- altered, in hypertension (rat), 404

Ventilation (see Lungs)

Ventricles

- afterload, effects on steady state cardiac output (dog), 255
- dynamics, effects of cardiac glycoside, role of arterial baroreceptors (dog), 321
- elastic modulus, as a function of age (hamster), 74
- excitability, effects of activation sequence (dog), 240
- fibrillation, atrial rhythm during (dog), 41
- hypertrophy (see Hypertrophy)
- left
 - chronic pressure overload, adaptations to (dog), 172
 - circumferential shortening velocity, in pressure overload (dog), 172
 - diameter, effect of pressure overload (dog), 172

- effects of aortic constriction (dog), 172
- wall stress, in pressure overload (dog), 172
- wall thickness, in pressure overload (dog), 172
- pacemaker (*see* Pacemaker)
- refractory period
 - effects of activation (dog), 240
 - in myocardial ischemia (dog), 302
- scanning, 131
- Verapamil**
 - effects on mitral valve fiber activity (monkey), 85
 - hypoxic pressor responses (isolated rat lung), 99
- Video systems**
 - scanning, 131
- Voltage**
 - Purkinje fibers, effect of procaine amide (sheep), 115
- Voltage clamp technique**
 - lidocaine effects on pacemaker currents (sheep), 203
- Volume** (*see also* Pressure-volume)
 - atrial, effect on systolic activity of atrial receptors (cat), 397
 - changes, effects on angiotensin II in normal subjects, 477
 - plasma, at high altitude, 391
 - expansion, renal natriuretic factor characteristics (rat), 250
 - loading, hemodynamic effects in hypertension (rat), 423

W

- Wall stress**
 - myocardial, effect of age (hamster), 74
 - ventricular, in chronic pressure overload (dog), 172
- Wall thickness**
 - ventricular, in chronic pressure overload (dog), 172
- Water**
 - composition, in veins and normotensive arteries in coarctation hypertension (rat), 375
- Weight, body**
 - at high altitude, 391

X

- Xenon clearance studies**
 - cerebral blood flow (cat), 488
 - hypothalamic blood flow (rabbit), 10
 - renal blood flow responses to angiotensin II, 35
 - renal vascular response to barbiturate, role of angiotensin (dog), 196

Z

- Zonulae occludentes**
 - ultrastructural study (mouse), 404



SUPPLEMENTS
TO
Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 38

January-June
1976

AMERICAN HEART ASSOCIATION, INC.



SUPPLEMENTS to CIRCULATION RESEARCH

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

7320 Greenville Ave., Dallas, Tex. 75231

EDITOR OF SUPPLEMENTS

Neal S. Bricker

Supplements to CIRCULATION RESEARCH will be published occasionally for binding annually in a separate volume entitled Supplements to CIRCULATION RESEARCH. Each supplement's page numbers will begin with page one. Supplements to CIRCULATION RESEARCH will be indexed separately at the end of the year.

PUBLICATIONS COMMITTEE, AMERICAN HEART ASSOCIATION

STANFORD WESSLER, *Chairman*
New York, N. Y.

William A. Bayless
New York, N. Y.

Brian Hoffman
New York, N.Y.

Herbert J. Levine
Boston, Mass.

Richard L. Popp
Stanford, Calif.

Neal S. Bricker
New York, N. Y.

Thomas N. James
Birmingham, Ala.

Clark H. Millikan
Rochester, Minn.

Abraham Rudolph
San Francisco, Calif.

Arthur Guyton
Jackson, Miss.

David Kritchevsky
Philadelphia, Pa.

Lucille E. Notter
New York, N. Y.

Eugene A. Stead, Jr.
Durham, N. C.

Donald C. Harrison
Stanford, Calif.

Thomas Killip
Evanston, Ill.

Milton C. Paige, Jr.
Boston, Mass.

Arthur Waltz
San Francisco, Calif.

Paul Yu
Rochester, N.Y.

Published monthly at the Publications Office, American Heart Association, 7320 Greenville Ave., Dallas, Tex. 75231. Second class postage paid at Dallas, Texas, and additional mailing offices.

SUPPLEMENTS TO CIRCULATION RESEARCH
AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

Volume 38

January-June
1976

SUPPLEMENT I: REGULATION OF CARDIAC METABOLISM

Introduction

Kern Wildenthal	I-1
-----------------------	-----

I. REGULATION OF INTERMEDIARY METABOLISM

Mechanisms of Regulation of Glycogen Synthesis and Degradation

Joseph Larner	I-2
---------------------	-----

Regulation of Glycolysis and Pyruvate Oxidation in Cardiac Muscle

Philip J. Randle	I-8
------------------------	-----

The Role of Acyltransferases in Fatty Esterification and Oxidation

B. Borrebaek, R. Christiansen, B. O. Christophersen and J. Bremer ..	I-16
--	------

Effects of Mechanical Activity and Hormones on Myocardial Glucose and Fatty Acid Utilization

James R. Neely, Kyra M. Whitmer and Seibu Mochizuki	I-22
---	------

Pyridine Nucleotide as an Indicator of the Oxygen Requirements for Energy-Linked Functions of Mitochondria

Britton Chance	I-31
----------------------	------

Coordination of Citric Acid Cycle Activity with Electron Transport Flux

John R. Williamson, Christopher Ford, Kumpei Kobayashi, John Illingworth and Brian Safer	I-39
--	------

II. METABOLIC REGULATION IN ISCHEMIA AND HYPOXIA

Effects of Anoxia and Regional Ischemia on Metabolism of Glucose and Fatty Acids

Lionel H. Opie	I-52
----------------------	------

Control of Energy Production in Myocardial Ischemia

E. Shrago, A. L. Shug, H. Sul, N. Bittar and J. D. Folts	I-75
--	------

Mitochondrial Structure and Function in Acute Myocardial Ischemic Injury

Robert B. Jennings and Charles E. Ganote	I-80
--	------

S-IV

Control of Ionic Permeabilities in Normal and Ischemic Heart Édouard Coraboeuf, Edith Deroubaix and Jacqueline Hoerter	I-92
Considerations in the Use of Biochemical Markers of Ischemic Injury Burton E. Sobel, Robert Roberts and Kenneth B. Larson	I-99
III. REGULATION OF PROTEIN AND AMINO ACID METABOLISM	
Protein and Amino Acid Metabolism in Man George F. Cahill, Jr.	I-109
Creatine and the Control of Muscle-Specific Protein Synthesis in Cardiac and Skeletal Muscle Joanne S. Ingwall	I-115
Effects of Anoxia and Ischemia on Protein Synthesis in Perfused Rat Hearts Race Kao, D. Eugene Rannels and Howard E. Morgan	I-124
Protein Degradation In Vivo and its Regulation Robert T. Schimke	I-131
Hormonal Control of Cardiac Protein and Amino Acid Balance Kern Wildenthal, Edmond E. Griffin and Joanne S. Ingwall	I-138
Control of Protein Balance in Hypertrophied Cardiac Muscle Radovan Zak, Ann F. Martin, M. Kumudavalli Reedy and Murray Rabinowitz	I-145
IV. SPECIAL PRESENTATION	
The Course of Science and Cardiac Metabolism Richard J. Bing	I-151
Concluding Remarks Paul A. Srere	I-156
Index	I-157

**SUPPLEMENT II: VOL. XXIV—HYPERTENSION: NEURAL, VASCULAR
AND HORMONAL FACTORS**

Foreword

Jay N. Cohn II-1

**Role of Heart and Lung Receptors with Nonmedullated Vagal Afferents
in Circulatory Control.**

Peter N. Thoren, David E. Donald and John T. Shepherd II-2

**Spinal Adrenergic Mechanisms Regulating Sympathetic Outflow to
Blood Vessels.**

David G. Taylor and Michael J. Brody II-10

**Sympathetic Nerve Activity: Role in Regulation of Blood Pressure in the
Spontaneously Hypertensive Rat.**

William V. Judy, August M. Watanabe, David P. Henry, Henry R. Besch,
Jr., William R. Murphy and Gregory M. Hockel II-21

**Interactions Between Sino-Aortic Reflexes and Cardiovascular Effects
of Sleep and Emotional Behavior in the Cat.**

Giorgio Baccelli, Renato Albertini, Giuseppe Mancia and Alberto
Zanchetti II-30

**Pharmacological Evidence for a Central Alpha Sympathomimetic
Mechanism Controlling Blood Pressure and Heart Rate.**

Michel Laubie, Bernard Delbarre, Dominique Bogaievsky, Yvan Boga-
levsky, Danita Tsoucaris-Kupfer, Danielle Senon, H     Schmitt
and Henri Schmitt II-35

**Plasma Adenosine 3'5'-Cyclic Monophosphate Response to Iso-
proterenol and Glucagon in Borderline (Labile) Hypertension.**

Franz H. Messerli, Otto Kuchel, Pavel Hamet, George Tolis, Gordon P.
Guthrie, Jr., Jacques Frayss  , Wojciech Nowaczynski, Roger Boucher,
Manuel Rojo-Ortega and Jacques Genest II-42

**Depressed Function of a Ouabain-Sensitive Sodium-Potassium Pump in
Blood Vessels From Renal Hypertensive Dogs.**

Henry W. Overbeck, Motilal B. Pamnani, Tai Akera, Theodore M. Brody
and Francis J. Haddy II-48

**Cellular Basis for Increased Sensitivity of Vascular Smooth Muscle in
Spontaneously Hypertensive Rats (SHR).**

Kent Hermsmeyer II-53

**Hyperplasia of Vascular Smooth Muscle in Experimental Hypertension
in the Rabbit.**

Rosemary D. Bevan, Edith van Marthens and John A. Bevan II-58

**Aggravation of Atherosclerosis by Hypertension in a Subhuman Pri-
mate Model with Coarctation of the Aorta.**

William Hollander, Irving Madoff, John Paddock and Barbara Kirkpa-
trick II-63

S-VI

Hemodynamic Role of Extracellular Fluid in Hypertension.	
Robert C. Tarazi	II-72
The Natriuretic and Hypotensive Effects of Potassium.	
David B. Young, Robert E. McCaa, Yi-jen Pan and Arthur C. Guyton ...	II-84
Partial Purification of a High Molecular Weight Renin from Hog Kidney.	
Melvin Levine, Kenneth E. Lentz, Joseph R. Kahn, Frederic E. Dorer and Leonard T. Skeggs	II-90
Studies on Membrane-Bound Renin in the Mouse and Rat.	
Carol M. Wilson, Patrick E. Ward, Ervin G. Erdos and Arpad Geese	II-95
Evidence that Des-1-Asp Angiotensin II Mediates the Renin-Angiotensin Response.	
Ronald H. Freeman, James O. David, Thomas E. Lohmeier and William S. Spielman	II-99
The Role of Angiotensins in Aldosterone Production.	
Emmanual L. Bravo, Mahesh C. Khosla and F. Merlin Bumpus	II-104
Receptor Binding of Angiotensin II and Antagonists: Correlation with Aldosterone Production by Isolated Adrenal Glomerulosa Cells.	
J. Douglas, S. Saltman, P. Fredlund, T. Kondo and K. J. Catt	II-108
The Effects of Des-1-Asp-Angiotensin II on Blood Pressure, Plasma Aldosterone Concentration and Plasma Renin Activity in the Rabbit.	
John M. Steele, Jr., Andre-Jacques Neusy and Jerome Lowenstein ...	II-113
Changes in Cardiovascular and Adrenal Cortical Responses to Angiotensin III Induced by Sodium Deprivation in the Rat.	
Michael J. Peach, Christina A. Sarstedt and E. Darracott Vaughan, Jr. .	II-117
Angiotensin II and Angiotensin III in Rat Blood.	
Peter F. Semple and James J. Morton	II-122
Summary of Current Studies on Angiotensin-Induced Aldosterone Release.	
Phillippe Meyer	II-127

A NOTE ON PAGE NUMBERS

SUPPLEMENTS I and II to CIRCULATION RESEARCH, Volume 38, January-June, 1976, include pages I-1 through I-261 and II-1 through II-128, respectively, to facilitate indexing. A combined index for both 1976 supplements (referring to pages by these supplement page numbers) is published with December CIRCULATION RESEARCH. Supplements are arranged for binding in a separate volume entitled "SUPPLEMENTS TO CIRCULATION RESEARCH, VOL. 38, 1976."

Circulation Research

SUPPLEMENT AUTHOR INDEX

I. Regulation of Cardiac Metabolism

II. Hypertension XXIV: Hypertension: Neural, Vascular and Hormonal Factors

VOLUME 38

JANUARY-JUNE 1976

Akera, T., II-48
Albertini, R., II-30

Bacelli, G., II-30
Besch, H.R., Jr., II-21
Bevan, J.A., II-58
Bevan, R.D., II-58
Bing, R.J., I-151
Bittar, N., I-75
Bogaievsky, D., II-35
Bogaievsky, Y., II-35
Borreback, B., I-16
Boucher, R., II-42
Bravo, E.L., II-104
Bremer, J., I-16
Brody, M.J., II-10
Brody, T.M., II-48
Bumpus, F.M., II-104

Cahill, G.F., Jr., I-109
Catt, K.J., II-108
Chance, B., I-31
Christiansen, R., I-16
Christophersen, B.O., I-16
Cohn, J.N., II-1
Coraboeuf, E., I-92

Davis, J.O., II-99
Delbarre, B., II-35
Deroubaix, E., I-92
Donald, D.E., II-2
Dorer, F.E., II-90
Douglas, J., II-108

Erdős, E.G., II-95

Folts, J.D., I-75
Ford, C., I-39
Frayse, J., II-42
Fredlund, P., II-108
Freeman, R.H., II-99

Ganote, C.E., I-80
Gecse, A., II-95
Genest, J., II-42
Griffin, E.E., I-138
Guthrie, G.P., Jr., II-42
Guyton, A.C., II-84

Haddy, F.J., II-48
Hamet, P., II-42
Henry, D.P., II-21
Hermesmeier, K., II-53
Hockel, G.M., II-21
Hoerter, J., I-92
Hollander, W., II-63

Illingworth, J., I-39
Ingwall, J.S., I-115, I-138

Jennings, R.B., I-80
Judy, W.V., II-21

Kahn, J.R., II-90
Kao, R., I-124
Khosla, M.C., II-104
Kirkpatrick, B., II-63
Kondo, T., II-108
Kuchel, O., II-42

Larner, J., I-2
Larson, K.B., I-99
Laubie, M., II-35
Lentz, K.E., II-90
Levine, M., II-90
Lohmeier, T.E., II-99
Lowenstein, J., II-113

Madoff, I., II-63
Mancia, G., II-30
Martin, A.F., I-145
McCaa, R.E., II-84
Messerli, F.H., II-42
Meyer, P., II-127
Mochizuki, S., I-22
Morgan, H.E., I-124
Morton, J.J., II-122
Murphy, W.R., II-21

Neely, J.R., I-22
Neusy, A.-J., II-113
Nowaczynski, W., II-42

Opie, L.H., I-52
Overbeck, H.W., II-48

Paddock, J., II-63
Pamnani, M.B., II-48

Pan, Y.-J., II-84
Peach, M.J., II-117

Rabinowitz, M., I-145
Randle, P.J., I-8
Rannels, D.E., I-124
Reddy, M.K., I-145
Roberts, R., I-99
Rojo-Ortega, M., II-42

Safer, B., I-39
Saltman, S., II-108
Sarstedt, C.A., II-117
Schimke, R.T., I-131
Schmitt, Hélène, II-35
Schmitt, Henri, II-35
Semple, P.F., II-122
Senon, D., II-35
Shepherd, J.T., II-2
Shrago, E., I-75
Shug, A.L., I-75
Skeggs, L.T., II-90
Sobel, B.E., I-99
Spielman, W.S., II-99
Srere, P.A., I-156
Steele, J.M., Jr., II-113
Sul, H., I-75

Tarazi, R.C., II-73
Taylor, D.G., II-10
Thorén, P.N., II-2
Tolis, G., II-42
Tsoucaris-Kupfer, D., II-35

van Marthens, E., II-58
Vaughan, E.D., Jr., II-117

Ward, P.E., II-95
Watanabe, A.M., II-21
Whitmer, K.M., I-22
Wildenthal, K., I-1, I-138
Williamson, J.R., I-39
Wilson, C.M., II-95

Young, D.B., II-84

Zak, R., I-145
Zanchetti, A., II-30

A

Acetylcholine

sensitivity of vascular smooth muscle in hypertension (rat), II-53

Acidosis

effects
on action potentials, I-92
on calcium-sodium conductance, I-92
on genesis of arrhythmias in Purkinje fibers, I-92
on potassium conductance, I-92
on sodium conductance, I-92
electrophysiological effects, in ischemia, I-92

Actin

activity, in cardiac hypertrophy, I-145
synthesis, creatine effects, I-115

 α -Actinin

activity, in cardiac hypertrophy, I-145

Actinomycin D

effects on membrane-bound renin (mouse and rat), II-95

Action potentials (see Potentials)**Acyl acceptors**

role in fatty acid utilization, I-16

Acyl-CoA

effects on energy production in myocardial ischemia, I-75

Acyl transfer

effect of diet, I-18
in work-loaded heart, I-30

Acyltransferases

role in fatty acid utilization, I-16

Adenine nucleotide

in myocardial infarction, I-52

Adenine nucleotide translocase

effects on energy production in myocardial ischemia, I-75

Adenosine 5'-diphosphate

phosphorylation, in mitochondrial energy-linked functions, I-31

Adenosine monophosphate

in myocardial ischemia, I-124

Adenosine 3',5'-monophosphate, cyclic

in central cardiovascular control, II-35
response to isoproterenol and glucagon in hyperkinetic borderline hypertension, II-42

Adenosine triphosphate

activity, in developing myocardial infarction, I-52
glycolytic, effect on calcium transport, I-97
mitochondrial, in electron transport flux, I-39, I-50
myocardial, in ischemia, I-124

Adenosine triphosphatase

Na⁺-K⁺-activated, in renal hypertension (dog), II-48
production, anaerobic vs. aerobic, in ischemia model, I-59
wastage, in ischemia, I-65

Adrenal cortical responses

to angiotensin III, effect of sodium deprivation (rat), II-117

Adrenal glomerulosa cells

receptor binding of angiotensin II and antagonists (dog), II-108

Adrenal steroids

effects of angiotensin II (dog), II-99

Adrenergic mechanisms

spinal, regulating sympathetic outflow to blood vessels, II-10

Adrenergic receptors (see Receptors)**Adrenocorticotrophic hormone**

effects on cardiovascular and adrenal cortical responses to angiotensin III (rat), II-117

Aldosterone

plasma concentration
effects of des-Asp¹-angiotensin II (rabbit), II-113
effect of potassium loading (dog), II-84
production
correlation with receptor binding of angiotensin II and antagonists (dog), II-108
role of angiotensins (dog and cat), II-104
release, angiotensin-induced, summary of current studies, II-127

Amino acids

cardiac, hormonal control, I-138
levels, in ischemic heart, I-124
metabolism, regulation, I-109

AMP (see Adenosine 3',5'-monophosphate)**Angiotensin**

role in aldosterone release, summary of current studies, II-127

Angiotensin II

and antagonists, receptor binding, correlation with aldosterone production (dog), II-108
and metabolites, in blood (rat), II-122
des-Asp¹-angiotensin II (see also Angiotensin III)
effects on blood pressure, plasma aldosterone, and plasma renin activity (rabbit), II-113
mediation of renin-angiotensin response (rat and dog), II-99
role, in aldosterone production (dog and cat), II-104
des-Asp¹-Arg²-angiotensin II, in blood (rat), II-122
des-Asp¹-Arg²-Val⁸-angiotensin II, in blood (rat), II-122
[poly(oAc)Seryl]-angiotensin II, role in aldosterone production (dog), II-104
role, in aldosterone production (dog and cat), II-104
Sar¹-angiotensin II, role in aldosterone production (dog and cat), II-104

Sar¹,Ala⁸-angiotensin II

effect on steroidogenesis (rat), II-99

receptor binding (dog), II-108

Sar¹,Ile⁸-angiotensin II, cardiovascular and adrenal cortical responses (rat), II-117

Angiotensin III (see also des-Asp¹-angiotensin II, under Angiotensin II)

cardiovascular and adrenal cortical responses, effect of sodium deprivation (rat), II-117
in blood (rat), II-122

Animal models (see Models)**Animal studies (baboon)**

citrate, distribution after coronary artery ligation, I-56
hexose phosphates, distribution after coronary artery ligation, I-56

Animal studies (cat)

aldosterone production, role of angiotensins, II-104
interactions of sino-aortic reflexes, sleep, and emotional behavior, cardiovascular effects, II-30
spinal adrenergic mechanisms regulating sympathetic outflow of blood vessels, II-10

Animal studies (chick)

muscle-specific protein synthesis, I-115

Animal studies (dog)

aldosterone production, role of angiotensins, II-104
angiotensin II and antagonists, receptor binding, correlation with aldosterone production, II-108
ionic permeabilities, I-92
ischemic injury, biochemical markers, I-99
metabolic changes in developing myocardial infarction, I-52
myocardial ischemia, energy production in, I-75

renin-angiotensin response, mediation of, II-99
 hypertension, metyrapone-induced, II-73
 potassium, natriuretic and hypotensive effects, II-84
 sodium-potassium pump, ouabain-sensitive, depressed function in renal hypertension (dog), II-48

Animal studies (frog)

ionic permeabilities, I-92

Animal studies (monkey)

atherosclerosis, aggravation by hypertension, II-63

Animal studies (mouse)

hormonal control of cardiac protein and amino acid balance, I-138

muscle-specific protein, synthesis, I-115

renin, membrane-bound, II-95

Animal studies (rabbit)

creatine phosphokinase in estimation of infarct size, I-99

des-Asp¹-angiotensin II, effects on blood pressure, plasma aldosterone, and plasma renin activity, II-113

vascular smooth muscle hyperplasia in hypertension, II-58

Animal studies (rat)

angiotensin II and III in blood, II-122

coordination of citric acid cycle activity with electron transport flux, I-39

ischemic heart, model, I-71

liver enzymes and cell fractions, half-lives, I-132

myocardial fatty acid utilization, effects of mechanical activity and hormones, I-22

myocardial glucose utilization, effects of mechanical activity and hormones, I-22

protein synthesis, effects of anoxia and ischemia, I-124

renin, membrane-bound, II-95

renin-angiotensin response, mediation of, II-99

spontaneously hypertensive

cellular basis for increased sensitivity of vascular smooth muscle, II-53

sympathetic nerve activity in blood pressure regulation, II-21

Anoxia (see also Ischemia)

cardiac mitochondrial responses, I-31

comparison with regional ischemia, I-61

energy production in, comparison with effects of myocardial infarction, I-52, I-61

free fatty acids, I-66

glucose, external, I-66

hydrogen ion sources, I-64

lipid metabolism, I-61

NADH, I-61

Pasteur effect, I-61

protein synthesis in perfused rat hearts, I-124

without ischemia, metabolic pathways, I-62

Antihypertensive drugs

in atherosclerosis aggravated by hypertension (monkey), II-63

Arrhythmias

Purkinje fibers, effects of lactate and acidosis, I-92

Aspartate aminotransferase

in electron transport flux, I-39

Atherosclerosis

aggravation by hypertension in primate with coarctation of aorta, II-63

Atrial fibers

in ischemia, I-92

Autoradiography

vascular muscle hyperplasia, II-58

B**Baroreceptors (see Receptors)****BE-2254 (HEAT)**

in study of spinal adrenergic mechanism, II-10

Biochemical markers

in ischemic injury, I-99

Blood

angiotensins II and III (rat), II-122

Blood flow

sympathetic outflow, spinal adrenergic mechanisms regulating, II-10

Blood pressure

central α -sympathomimetic control, pharmacological evidence for, II-35

effects of des-Asp¹-angiotensin II (rabbit), II-113

regulation, role of sympathetic nerves, in spontaneously hypertensive rat, II-21

Brain

protein and amino acid metabolism, I-109

C**C fibers**

vagal, role in circulatory control, II-2

Calcium

activity, in ischemic damage, I-90

phosphoenolpyruvate-stimulated, in myocardial ischemia, I-75

transport, effects of glycolytic ATP, I-97

Calcium ions

in mitochondrial energy-linked functions, I-31

Calcium-sodium conductance

effects of acidosis, I-92

Carbon dioxide

in developing myocardial infarction, I-52

Cardioplegia

metabolic patterns, I-60

Cardiopulmonary receptors (see Receptors)**Cardiovascular responses**

to angiotensin III, effect of sodium deprivation (rat), II-117

Carnitine

glucagon effects, I-21

in heart, I-20

in liver, I-20

role in fatty acid utilization, I-16

Carnitine palmityltransferase

role in fatty acid utilization, I-16

Cascade concept

in glycogen metabolism, I-1

Catecholamines

of spinal fibers, in regulation of sympathetic outflow to blood vessels, II-10

Cathepsins

effects of insulin, I-138

in connective tissue catabolism, I-135

Cell culture

sensitivity to neurotransmitters (chick), II-53

p-Chlorophenylalanine

in study of spinal adrenergic mechanisms, II-10

Cholesterol

in atherosclerosis aggravated by hypertension (monkey), II-63

Circulatory control

role of heart and lung receptors with nonmedullated vagal afferents, II-2

sino-aortic reflexes during natural behavior (cat), II-30

Citrate

cytoplasmic, activity in heart muscle, I-15

Citrate synthase

in electron transport flux, I-39

Citric acid cycle

activity, coordination with electron transport flux, I-39

effects of increased cardiac work, I-22

Clonidine

activity in central α -sympathomimetic control of blood pressure and heart rate, II-35

Computer models (see Models)**Connective tissue**

catabolism, I-135

Contractility

and muscular activity, role of creatine, I-115

in ischemia, I-65

Coronary artery ligation

in study of developing myocardial infarction, I-52

Coronary blood flow

reduction, metabolic effects, I-52

Cortisol

plasma, effect of potassium loading (dog), II-84

Creatine

effects

on actin synthesis, I-115

on creatine phosphokinase, I-115

on lactic dehydrogenase accumulation, I-115

on myosin heavy chain synthesis, I-115

mechanisms, in muscle-specific protein synthesis, I-115

Creatine phosphate

in developing myocardial infarction, I-52

in ischemic heart, I-124

Creatine phosphokinase

and energy transfer, I-123

as a biochemical marker of ischemic myocardial injury, I-99

muscle-specific, effects of creatine concentration, I-115

Cyclic AMP (see Adenosine 3',5'-monophosphate, cyclic)**Cytochrome c**

oxidation, in mitochondrial energy-linked functions, I-31

synthesis and degradation, in cardiac hypertrophy, I-145

D**Deoxyribonucleic acid**

in vascular smooth muscle hyperplasia (rabbit), II-58

Dexamethasone

in study of angiotensin III effects (rabbit), II-113

in study of angiotensin II effects on steroidogenesis (rat and dog), II-99

Dichloroacetate

in ischemia, I-12

metabolic effects, in cardiac muscle, I-10

Diet

effect on acyl transfers, I-18

DNA (see Deoxyribonucleic acid)**L-Dopa**

in study of spinal adrenergic mechanisms, II-10

E**Electrical activity**

cardiac, metabolic effects, I-92

Electrogenic active transport

in normal and ischemic heart, I-92

Electron transport

flux

coordination with citric acid cycle activity, I-39

mitochondrial ATP, I-39, I-50

mitochondrial, oxygen requirements, I-33

Emotional behavior

in circulatory control (cat), II-30

Energy

production

aerobic and anaerobic, in myocardial infarction and anoxia, comparison, I-152

in myocardial ischemia, I-75

transfer, creatine phosphokinase and, I-123

Energy-coupling

mitochondrial, I-31

Enzymes

cascade concept, in glycogen metabolism, I-1

covalent and noncovalent control, in glycogen metabolism, I-1

in connective tissue catabolism, I-135

liver, half-lives, I-132

Erucic acid

in heart failure, I-21

Extracellular fluid

hemodynamic role in hypertension, II-73

F**Fasting**

effects on protein and amino acid metabolism, I-109

Fatty acids

and glucose, interactions, I-30

free

in anoxia, I-66

in developing infarction, I-66

metabolism, effect of regional ischemia, I-52

oxidation

effects of mechanical activity, I-22

rate, factors, I-18

utilization

organ differences, I-19

role of acyltransferases, I-16

role of carnitine, I-16

role of glycerophosphate, I-16

utilization, myocardial

effects of hormones, I-22

effects of mechanical activity, I-22

Fluorescence histochemical studies

spinal adrenergic mechanism regulating sympathetic outflow to blood vessels, II-10

G**Glucagon**

cyclic AMP response in hyperkinetic borderline hypertension, II-42

effects on carnitine levels, I-21

role in hepatic gluconeogenesis, I-112

Gluconeogenesis

hepatic, role of glucagon, I-112

Glucose

and fatty acid, interactions, I-30

border zone, I-69

external

in anoxia, I-66

in developing infarction, I-66

metabolism, effects of regional ischemia, I-52

myocardial

effects of hormones, I-22

effects of mechanical activity, I-22

effects of ventricular pressure, I-23

perfusion, effects on electron transport flux, I-30

uptake in anoxia and ischemia, I-124

Glucose-insulin-potassium (GIK)

as metabolic intervention for myocardial infarction, I-72

Glycerophosphate

role in fatty acid utilization, I-16

Glycerophosphate acyltransferase

role in fatty acid utilization, I-16

Glycogen

in developing myocardial infarction, I-52

synthesis and degradation

cascade concept, I-1

covalent controls, I-2

enzymatic activity, I-2

inotropic considerations, I-1

mechanisms of regulation, I-2

noncovalent controls, I-1

Glycogen synthase

activity in glycogen metabolism, I-1

Glycolysis

effects of increased cardiac work, I-22

regulation

in cardiac muscle, I-8

molecular and operational mechanisms, I-8

Glycolytic flux

in developing myocardial infarction, I-52

in regional ischemia, I-52

GTP (guanosine 5'-triphosphate)

myocardial, effect of ischemia, I-124

H**Heart**

- arrest, metabolic patterns, comparison with regional ischemia, I-60
- carnitine, I-20
- failure, erucic acid and, I-21
- ionic permeabilities, control of, I-92
- ischemic (*see* Ischemia)
- tissue, electrical activity, I-92
- working
 - acyl transfers, I-30
 - electron transport flux, I-39
 - glucose-fatty acid interactions, I-30
 - Langendorff's model, I-29
 - myocardial fatty acid utilization, I-22
 - myocardial glucose utilization, I-22
 - oxaloacetate, mitochondrial, I-49

Heart rate

- central α -sympathomimetic control, pharmacological evidence for, II-35

HEAT (*see* BE-2254)**Hemodynamics**

- in essential hypertension, role of extracellular fluid, II-73

Hexose monophosphate

- myocardial, in anoxia, I-52

Hexose phosphates

- in developing myocardial infarction, I-52

Hormones, effects

- on cardiac protein and amino acid balance, I-138
- on myocardial fatty acid utilization, I-22
- on myocardial glucose utilization, I-22

Hydralazine

- in atherosclerosis aggravated by hypertension (monkey), II-63

Hydrochlorothiazide

- in atherosclerosis aggravated by hypertension (monkey), II-63

Hydrogen ions

- in developing myocardial infarction, I-52
- sources
 - in anoxia, I-64
 - in regional ischemia, I-64

Hyperlipidemia

- associated with atherosclerosis aggravated by hypertension (monkey), II-63

Hyperplasia

- vascular smooth muscle, in hypertension (rabbit), II-58

Hypertension

- atherosclerosis and (monkey), II-63
- coarctation of aorta and (monkey), II-63
- extracellular fluid, hemodynamic role, II-73
- hyperkinetic borderline, cyclic AMP response to isoproterenol and glucagon, II-42
- natriuretic and hypotensive effects of potassium (dog), II-84
- neural, vascular, and hormonal features, II-1
- plasma volume, II-75
- renal, ouabain-sensitive sodium-potassium pump, depressed function (dog), II-48
- spontaneous
 - cellular basis for increased sensitivity of vascular smooth muscle (rat), II-53
 - sympathetic nerves in blood pressure regulation (rat), II-21

Hypophysectomy

- in study of renin-angiotensin system (rat), II-99

Hypotensive effects

- of potassium (dog), II-84

Hypoxia

- metabolic regulation in, I-52

I**Infarction, myocardial**

- aerobic and anaerobic energy production, relative rates, and comparison with effects of anoxia, I-52
- developing (*see* Ischemia, regional)
- metabolic interventions, I-72

- myoglobinemia in, I-106
- scintigrams, I-106

Insulin

- effects
 - on activation of glycolysis by increased work, I-23
 - on cardiac phenylalanine, I-138
 - on cardiac protein and amino acid balance, I-138
 - on cathepsin D activity, I-138
 - on protein synthesis in ischemia, I-124
- perfusion, effects on electron transport flux, I-39

Inulin

- ^{14}C -labeled, in study of vascular smooth muscle hyperplasia, II-58

Ionic permeabilities

- control of, in normal and ischemic heart, I-92

Ischemia (*see also* Anoxia)

- cardiac
 - electrical activity, I-92
 - ionic permeabilities, control of, I-92
 - heart model (rat), I-71
 - lactate permeation, I-12
 - metabolic regulation in, I-52
 - protein synthesis, in perfused rat hearts, I-124
 - S-T segment changes, I-97
- global, comparison with regional, I-60
- myocardial
 - animal models, validity, I-90
 - energy production, control of, I-75
- myocardial injury
 - acute, mitochondrial structure and function, I-80
 - biochemical markers, I-99
 - creatine phosphokinase, estimation of, I-99
- regional
 - ATP wastage, I-65
 - border zones, I-69
 - comparison with anoxic perfused heart, I-61
 - comparison with global, I-60
 - contractile activity, I-65
 - fatty acid metabolism in, I-52
 - free fatty acids, I-66
 - glucose, external, I-66
 - glucose metabolism, I-63
 - glycolytic flux, I-63
 - hydrogen ion sources, I-64
 - lipid metabolism, I-64
 - mechanism of ischemic injury, I-64
 - nucleotide changes, I-64
 - residual oxidative metabolism, I-61
 - without anoxia, metabolic pathways, I-63
 - total, metabolic patterns, I-60

Isoproterenol

- cyclic AMP response, in hyperkinetic borderline hypertension, II-42

K**Kallikrein**

- microsomal (mouse and rat), II-95

 α -Ketoglutarate dehydrogenase

- electron transport flux, I-39

Kidney

- function, cardiac receptors and, II-2
- hemodynamics
 - angiotensin III effects (rabbit), II-113
 - effects of renin-angiotensin system (dog), II-99

L**Lactate**

- effects on genesis of arrhythmias in Purkinje fibers, I-94
- electrophysiological effects in ischemia, I-92
- in developing myocardial infarction, I-52
- in myocardial ischemia, I-124
- permeation, in ischemic heart, I-12
- production, in ischemic heart, I-124

Lactic dehydrogenase

muscle, effects of creatine, I-115

Langendorff model

working heart, I-29

Leucine

activity, in cardiac hypertrophy, I-145

Lipids

in atherosclerosis aggravated by hypertension (monkey), II-63

metabolism

in anoxia, I-61

in regional ischemia, I-64

Lipoproteins

in atherosclerosis aggravated by hypertension (monkey), II-63

Liver

carnitine, I-20

enzymes and cell fractions, half-lives (rat), I-132

gluconeogenesis, role of glucagon, I-112

mitochondria (*see* Mitochondria)

Lung

receptors (*see* Receptors)

M**Malate-aspartate cycle**

electron transport flux, I-39, I-48

Malate- α -ketoglutarate

electron transport flux, I-39

Membrane potentials (*see* Potentials)**Metabolism**

cardiac, science of

development, I-151

experimental methods, development, I-151

future of, I-154

structure-function relations, I-156

intermediary, regulation I-52

Metrapone

hypertension induced by (dog), II-73

Microsomes

kallikrein (mouse and rat), II-95

renin (mouse and rat), II-95

Mitochondria, heart

ATP, in electron transport flux, I-39, I-50

electron transport, oxygen requirements, I-33

energy production, in myocardial ischemia, I-75

glycerophosphate acyltransferase activity, I-16

in control of protein balance in hypertrophied muscle, I-145

NADH/NAD ratio, significance, in electron transport flux through citric acid cycle, I-39

oxaloacetate, during increased heart work, I-49

oxygen requirements for energy-linked functions, pyridine nucleotide as indicator, I-31

palmitylcarnitine formation, I-16

respiration, in acute myocardial ischemic injury, I-80

responses to anoxia, I-31

structural changes, in reversible and irreversible myocardial ischemia, I-81

structure and function, in acute myocardial ischemic injury, I-80

Mitochondria, liver

acyl acceptors, I-16

Models

animal, validity in myocardial ischemia, I-90

computer, electron transport flux through citric acid cycle, I-51

Langendorff working heart, I-29

Monoamine

of spinal fibers, in regulation of sympathetic outflow to blood vessels, II-10

Morphine

in study of angiotensin II effects on steroidogenesis (rat), II-99

Muscle, cardiac

dichloroacetate, metabolic effects, I-10

glycolysis, regulation, I-8

hypertrophied, protein balance, control of, I-145

protein synthesis, creatine effects, I-115

pyruvate oxidation, regulation, I-8

Muscle, skeletal

protein and amino acid metabolism, I-109

protein synthesis, creatine effects, I-115

Muscle, vascular smooth

cellular basis for increased sensitivity, in hypertension (rat), II-53

hyperplasia in hypertension (rabbit), II-58

norepinephrine sensitivity in spontaneously hypertensive rat, II-53

Myocardium (*see* specific condition or metabolic substance)**Myoglobinemia**

in infarction, I-106

Myosin

light chain, activity in cardiac hypertrophy, I-145

heavy chain, synthesis

creatine effects, I-115

in cardiac hypertrophy, I-145

N**Nandrolone phenpropionate**

effects on membrane-bound renin (mouse and rat), II-95

Natriuretic effects

of potassium (dog), II-84

Neurotransmitters

in central α -sympathomimetic control of blood pressure and heart rate, II-35

sensitivity of isolated smooth muscle cells (chick), II-53

sensitivity of vascular smooth muscle, in spontaneously hypertensive rat, II-53

Nicotinamide adenine dinucleotide

NADH, in anoxia, I-61

NADH/NAD ratio, significance, in electron transport flux through citric acid cycle, I-39

Noradrenergic mechanism

controlling blood pressure and heart rate, pharmacological evidence for, II-35

Norepinephrine

sensitivity, in spontaneously hypertensive rat, II-53

Nucleotides

changes, in regional ischemia, I-64

levels, in ischemic heart, I-124

O**Octanoate**

effects, in electron transport flux, I-39

Oubain

and sodium-potassium pump, in renal hypertension (dog), II-48

Oxaloacetate

mitochondrial, during increased heart work, I-49

Oxidative metabolism

residual, in regional ischemia, I-61

Oxygen

border zone, I-69

consumption

effects of mechanical activity, I-22

effects of ventricular pressure, I-23

requirements

for energy-linked functions of mitochondria, pyridine nucleotide as an indicator, I-31

for mitochondrial electron transport, I-33

uptake, in developing myocardial infarction, I-52

P**Palmitate**

effects on activation of glycolysis by increased work, I-23

myocardial, effect of ischemia, I-124

oxidation, effects of ventricular pressure, I-23

uptake, in anoxia and ischemia, I-124

- Palmitylcarnitine**
mitochondrial production, I-16
- Palmitylglycerophosphate**
mitochondrial production, I-16
- Pasteur effect**
in anoxia, I-61
- Phentolamine**
in study of spinal adrenergic mechanisms, II-10
- Phenylalanine**
effects of insulin, I-138
metabolism, in ischemic heart, I-124
- Phosphate**
inorganic, in myocardial infarction, I-52
- Phosphoenolpyruvate**
effects on energy production in myocardial ischemia, I-75
- Phosphofructokinase**
in developing myocardial infarction, I-52
- Phosphorylase**
activity in glycogen metabolism, I-1
- Plasma volume**
in essential hypertension, II-75
- Polysomes**
levels in ischemic heart, I-124
- Potassium**
conductance, effect of acidosis, I-92
natriuretic and hypotensive effects (dog), II-84
- Potentials**
action
in CO₂-induced acidosis, I-92
metabolic inhibition, I-92
membrane, in mitochondrial energy-linked functions, I-31
- Propranolol**
in study of cyclic AMP response to isoproterenol and glucagon, in hypertension, II-42
- Proteases**
neutral, role in myofibrillar degradation, I-145
role in protein degradation, I-131
- Protein**
balance
hormonal control, I-138
in hypertrophied cardiac muscle, control of, I-145
cardiac synthesis and degradation, effects of insulin, I-138
degradation in vivo and its regulation, I-131
metabolism, regulation, I-109
muscle-specific, synthesis, effects of creatine, I-115
myofibrillar
degradation, role of neutral proteases, I-145
turnover, in cardiac hypertrophy, I-145
synthesis, in perfused rat heart, effects of anoxia and ischemia, I-124
turnover, properties of, I-131
- Purkinje fibers**
arrhythmias, effects of lactate and acidosis, I-92
in ischemia, I-92
- Pyridine nucleotide**
as an indicator of the oxygen requirements for energy-linked functions of mitochondria, I-31
energy-dependent reduction, oxygen requirement, I-33
- Pyruvate**
effects on mitochondria in acute myocardial ischemic injury, I-80
oxidation, regulation
in cardiac muscle, I-8
molecular and operational mechanisms, I-9
- Pyruvate dehydrogenase**
inhibitors, I-15
- Pyruvate malate**
oxidation, in acute myocardial ischemic injury, I-89

R

- Receptors**
 α -adrenergic, in regulation of sympathetic outflow to blood vessels, II-10

- baroreceptors, in sympathetic nerve regulation of blood pressure, II-21
binding of angiotensin II and antagonists, correlation with aldosterone production (dog), II-108
cardiac
role in renal function, II-2
with medullated vagal afferents, role in circulatory control, II-2
cardiopulmonary, with nonmedullated vagal afferents, role in circulatory control, II-2
sites, for angiotensin (dog and rat), II-99
- Reflexes**
sino-aortic, cardiovascular effects of sleep, and emotional behavior, interactions in circulatory control (cat), II-30
- Renin**
high molecular weight, partial purification from hog kidney, II-90
membrane-bound (mouse and rat), II-95
microsomal (mouse and rat), II-95
plasma
effects of des-Asp¹-angiotensin II (rabbit), II-113
effect of potassium loading (dog), II-84
extracellular fluid and, II-73
in atherosclerosis aggravated by hypertension (monkey), II-63
- Renin-angiotensin-aldosterone system**
in sodium deprivation, role of angiotensin III (rat), II-117
- Renin-angiotensin response**
mediation by des-Asp¹-angiotensin II (rat and dog), II-99
- Reserpine**
in atherosclerosis aggravated by hypertension (monkey), II-63
- Ribosomal subunits**
levels in ischemic heart, I-124
- Rubidium-86**
in study of sodium-potassium pump (dog), II-48

S

- Science**
and cardiac metabolism, course of, I-151
- Scintigrams**
in infarction, I-106
- Serotonin**
sensitivity of vascular smooth muscle, in spontaneously hypertensive rat, II-53
- Sleep**
desynchronized, and sino-aortic reflexes, interaction in circulatory control (cat), II-30
- Sino-aortic reflexes** (see Reflexes)
- Sodium**
balance, effects of potassium loading (dog), II-84
conductance, effects of acidosis, I-92
deprivation, effects on cardiovascular and adrenal cortical responses to angiotensin III (rat), II-117
exchangeable, in hypertension, II-77
restriction, in study of renin-angiotensin system (rat), II-99
- Sodium-potassium pump**
ouabain-sensitive, depressed function in renal hypertension (dog), II-48
- Spinal cord**
adrenergic mechanisms regulating sympathetic outflow to blood vessels, II-10
catecholamine-containing fibers, role in regulation of sympathetic outflow to blood vessels, II-10
fluorescence histochemistry, II-10
- S-T segment**
changes in ischemia, I-97
- Steroidogenesis**
effects of angiotensin II or des-Asp¹-angiotensin II (dog and rat), II-99
- Submaxillary gland**
renin, membrane-bound (mouse and rat), II-95
- Succinic oxidase**
mitochondrial, activity in acute myocardial ischemia, I-80

Sympathetic nerves

in regulation of blood pressure in spontaneously hypertensive rat, II-21

 α -Sympathomimetic mechanism

controlling blood pressure and heart rate, pharmacological evidence for, II-35

T**Taurine**

cardiac metabolism, I-112

significance in heart failure, I-112

Testosterone

effects on membrane-bound renin (mouse and rat), II-95

Thymidine

³H-labeled, in study of vascular smooth muscle hyperplasia, II-58

Tricarboxylate carrier system

activity in energy production in myocardial ischemia, I-75

Triglycerides

formation in heart, factors, I-18

Tropomyosin

activity in cardiac hypertrophy, I-145

U**UDP-glucose glycogen synthase**

activity in glycogen metabolism, I-1

V**Vagal afferents**

nonmedulated

role in circulatory control, II-2

role in tonic vasomotor inhibition, II-2

Vagal C fibers

cardiac, role in circulatory control, II-2

Vascular smooth muscle (see Muscle)**Ventricular pressure**

effects

on glucose utilization, I-23

on oxygen consumption, I-23

on palmitate oxidation, I-23

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 39

July-December
1976

AMERICAN HEART ASSOCIATION, INC.



Circulation Research

An Official Journal of the American Heart Association

Circulation Research provides a medium for bringing together basic research on the cardiovascular system from various disciplines including biology, biochemistry, biophysics, morphology, pathology, physiology, and pharmacology. The Journal also will accept for publication manuscripts on clinical research that contribute to an understanding of fundamental problems.

Editor

BRIAN F. HOFFMAN

Associate Editor

MICHAEL R. ROSEN

Editorial Office: Department of Pharmacology, College of Physicians and Surgeons,
630 West 168th Street, New York, New York 10032

EDITORIAL BOARD

ROBERT S. ALEXANDER
ROGER C. BARR
DEREK BERGEL
JOHN A. BEVAN
EDWIN L. BIERMAN
NORMAN BRACHFELD
ALLAN J. BRADY
BARRY M. BRENNER
MICHAEL J. BRODY
F. MERLIN BUMPUS
EDWARD CARMELIET
SHU CHIEN
WILLIAM E. CONNOR
RAMZI S. COTRAN
JAMES W. COVELL
PAUL F. CRANEFIELD
JAMES O. DAVIS
GEORGE I. DRUMMOND
BRIAN R. DULING
DIRK DURRER
ERVIN G. ERDOS
ALFRED P. FISHMAN
RAY W. FULLER

WALTER GAMBLE
JOSEPH P. GILMORE
ANTONIO M. GOTTO, JR.
DONALD B. HACKEL
FRANCIS J. HADDY
LLOYD L. HEFNER
MICHAEL HEYMANN
ROBERT B. JENNINGS
ARNOLD M. KATZ
GLENN A. LANGER
MATTHEW N. LEVY
THOMAS C. LLOYD, JR.
JEAN M. MARSHALL
JOHN C. MCGIFF
N. SCOTT McNUTT
GORDON K. MOE
NEIL C. MORAN
HOWARD E. MORGAN
RICHARD A. MURPHY
YALE NEMERSON
M. I. M. NOBLE
RAY A. OLSSON

SUZANNE OPARIL
WILLIAM W. PARMLEY
WILLIAM PERL
BERTRAM PITT
OSCAR W. PORTMAN
MARTIN REIVICH
EUGENE M. RENKIN
HARALD REUTER
KIICHI SAGAWA
HAROLD SANDLER
JAMES SCHEUER
ARNOLD SCHWARTZ
JOHN T. SHEPHERD
BURTON E. SOBEL
MADISON S. SPACH
S. P. SUTERA
MARIO VASSALLE
ANNEMARIE WEBER
JOHN B. WEST
ERICH E. WINDHAGER
SAUL WINEGRAD
ANDREW L. WIT
RICHARD J. WURTMAN

ROBERT M. BERNE; JULIUS H. COMROE, JR., *Consulting Editors*
SIVIA BRODSKY, *Assistant Editor*

Publications Committee, American Heart Association

Stanford Wessler, *Chairman*

Neal S. Bricker
Arthur Guyton
Donald C. Harrison
Brian F. Hoffman
Thomas N. James

Thomas Killip
Herbert J. Levine
Fletcher McDowell
Clark H. Millikan
Lucille E. Notter
Milton C. Paige, Jr.

Richard L. Popp
Abraham M. Rudolph
Eugene A. Stead, Jr.
Arthur G. Waltz
Paul N. Yu

Published monthly at the Publications Office, American Heart Association, 7320 Greenville Avenue, Dallas, Texas 75231. Second class postage paid at Dallas, Texas, and additional mailing offices.

Copyright © 1976 by the American Heart Association, Inc., 7320 Greenville Avenue, Dallas, Texas 75231

Circulation Research

AN OFFICIAL JOURNAL OF THE AMERICAN HEART ASSOCIATION

VOLUME 39

July-December 1976

No. 1 (July)

Editorial: Controversies in Cardiovascular Research. <i>Michael R. Rosen and Brian F. Hoffman</i>	1
Brief Reviews: Is the Cell Membrane Na^+, K^+ -ATPase Enzyme System the Pharmacological Receptor for Digitalis? <i>Arnold Schwartz</i>	2
Modulation of Ca^{2+} Control of Dog and Rabbit Cardiac Myofibrils by Mg^{2+} : Comparison with Rabbit Skeletal Myofibrils. <i>R. John Solaro and John S. Shiner</i>	8
Continuous Determination of Beat-to-Beat Stroke Volume from Aortic Pressure Pulses in the Dog. <i>Maurice J. Bourgeois, Barry K. Gilbert, Göetz von Bernuth, and Earl H. Wood</i>	15
External Detection and Visualization of Myocardial Ischemia with ^{11}C -Substrates in Vitro and in Vivo. <i>Edward S. Weiss, Edward J. Hoffman, Michael E. Phelps, Michael J. Welch, Philip D. Henry, Michel M. Ter-Pogossian, and Burton E. Sobel</i>	24
Effects of Acutely Induced Hypertension in Cats on Pial Arteriolar Caliber, Local Cerebral Blood Flow, and the Blood-Brain Barrier. <i>Eric T. MacKenzie, Svend Strandgaard, David I. Graham, John V. Jones, A. Murray Harper, and J. Keith Farrar</i>	33
Physiological Loading of Isolated Mammalian Cardiac Muscle. <i>Walter J. Paulus, Victor A. Claes, and Dirk L. Brutsaert</i>	42
Compression of the Coronary Arteries by the Fibrillating Canine Heart. <i>James Downey</i>	53
Turbulent Blood Flow in the Ascending Aorta of Humans with Normal and Diseased Aortic Valves. <i>Paul D. Stein and Hani N. Sabbah</i>	58
Studies on the Nature of a Prostaglandin Receptor in Canine and Rabbit Vascular Smooth Muscle. <i>Stanley Greenberg, Philip J. Kadowitz, John P. Long, and William R. Wilson</i>	66
Spontaneous Action Potentials of Cells in the Canine Sinus Node. <i>W. Thomas Woods, Ferdinand Urthaler, and Thomas N. James</i>	76
Abnormalities in Heart Membranes and Myofibrils during Bacterial Infective Cardiomyopathy in the Rabbit. <i>Charles W. Tomlinson, Sheu L. Lee, and Naranjan S. Dhalla</i>	82
Evidence for an Adenosine Receptor on the Surface of Dog Coronary Myocytes. <i>Ray A. Olsson, Charles J. Davis, Edward M. Khouri, and Randolph E. Patterson</i>	93
Action Potentials in Chick Atria: Ontogenetic Changes in the Dependence of Tetrodotoxin-Resistant Action Potentials on Calcium, Strontium, and Barium. <i>Achilles J. Pappano</i> ..	99
Limitations of the Double Sucrose Gap Voltage Clamp Technique in Tension-Voltage Determinations on Frog Atrial Muscle. <i>Merrill Tarr and John W. Trank</i>	106
Measurements of Disordered Flows Distal to Subtotal Vascular Stenoses in the Thoracic Aortas of Dogs. <i>Don P. Giddens, Robert F. Mabon, and Robert A. Cassanova</i>	112
Neurogenic Sympathetic Vasoconstriction of the Rabbit Basilar Artery. <i>Tony J.-F. Lee, Che Su, and John A. Bevan</i>	120
Pharmacological Mechanisms for Left Ventricular Unloading in Clinical Congestive Heart Failure: Differential Effects of Nitroprusside, Phentolamine, and Nitroglycerin on Cardiac Function and Peripheral Circulation. <i>Richard R. Miller, Louis A. Vismara, David O. Williams, Ezra A. Amsterdam, and Dean T. Mason</i>	127

Calcium Accumulation and Enzymatic Activities of Subcellular Fractions from Aortas and Ventricles of Genetically Hypertensive Rats. <i>Jiann-Wu Wei, Ronald A. Janis, and Edwin E. Daniel</i>	133
Letters to the Editor	141
Instructions to Authors	143
News from the American Heart Association	146

No. 2 (August)

Special Article: Role of Capillary Endothelium in the Clearance of Chylomicrons: A Model for Lipid Transport from Blood by Lateral Diffusion in Cell Membranes. <i>Robert O. Scow, E. Joan Blanchette-Mackie, and Louis C. Smith</i>	149
Modification by Prostaglandins E₁ and E₂, Indomethacin, and Arachidonic Acid of the Vasoconstrictor Responses of the Isolated Perfused Rabbit and Rat Mesenteric Arteries to Adrenergic Stimuli. <i>Kafait U. Malik, Patricia Ryan, and John C. McGiff</i>	163
Circus Movement in Rabbit Atrial Muscle as a Mechanism of Tachycardia. II. The Role of Nonuniform Recovery of Excitability in the Occurrence of Unidirectional Block, as Studied with Multiple Microelectrodes. <i>Maurits A. Allesie, Felix I.M. Bonke, and Francien J.G. Schopman</i>	168
Mechanism for the Positive Inotropic Effect of Angiotensin II on Isolated Cardiac Muscle. <i>Richard J. Freer, Achilles J. Pappano, Michael J. Peach, Kenneth T. Bing, Michael J. McLean, Steven Vogel, and Nick Sperelakis</i>	178
Response of Aldosterone and Blood Pressure to Angiotensin II Infusion in Anephric Man: Effect of Sodium Deprivation. <i>Jacques Dehenné, Victoria Cuesta, J. Douglas Briggs, Jehoiada J. Brown, Robert Fraser, Anthony F. Lever, James J. Morton, J. Ian S. Robertson, and Malcolm Tree</i>	183
Influence of 5- and 6-Hydroxydopamine on Adrenergic Transmission and Nerve Terminal Morphology in the Canine Pulmonary Vascular Bed. <i>Philip J. Kadowitz, David S. Knight, Richard G. Hibbs, Jeffery P. Ellison, Paul D. Joiner, Michael J. Brody and Albert L. Hyman</i>	191
Renin Release by Rat Kidney Slices Incubated in Vitro: Role of Sodium and of α- and β-Adrenergic Receptors, and Effect of Vincristine. <i>Alessandro M. Capponi and Michel B. Vallotton</i>	200
Plasma Catecholamines during Paroxysmal Neurogenic Hypertension in Quadriplegic Man. <i>C.J. Mathias, N.J. Christensen, J.L. Corbett, H.L. Frankel, and J.M.K. Spalding</i>	204
The Low Frequency Dynamic Viscoelastic Properties of Human Aortic Valve Tissue. <i>Koon O. Lim and Derek R. Boughner</i>	209
Redistribution of Collateral Blood Flow from Necrotic to Surviving Myocardium following Coronary Occlusion in the Dog. <i>Heinz O. Hirzel, George R. Nelson, Edmund H. Sonnenblick, and Edward S. Kirk</i>	214
The 1, 2, 3, 4 Phenomenon: Atrioventricular Nodal Gap in the Dog. <i>Andres R. Ticzon, Anthony N. Damato, Antonio R. Caracta, Sun H. Lau, and Gustavus A. Bobb</i>	223
The Stimulation of Cardiac Prostaglandin Production by Blood Plasma and Its Relationship to the Regulation of Coronary Flow in Isolated Isovolumic Rabbit Hearts. <i>Richard L. Moretti, S. Abraham, and Roger R. Ecker</i>	231
Myocardial Necrosis, Fibrosis, and DNA Synthesis in Experimental Cardiac Hypertrophy Induced by Sudden Pressure Overload. <i>Sanford P. Bishop and Lawrence R. Melsen</i> ...	238
Interaction of Capillary, Interstitial, and Lymphatic Forces in the Canine Hindpaw. <i>Hsing I Chen, Harris J. Granger, and Aubrey E. Taylor</i>	245

Regional Refractoriness within the Ventricular Conduction System: An Evaluation of the "Gate" Hypothesis. <i>Ralph Lazzara, Nabil El-Sherif, Benjamin Befeler, and Benjamin J. Scherlag</i>	254
Inhibition by Acetylcholine of the Norepinephrine Release Evoked by Potassium in Canine Saphenous Veins. <i>Paul M. Vanhoutte and Tony J. Verbeuren</i>	263
Progressive Perfusion Impairment during Prolonged Low Flow Myocardial Ischemia in Dogs. <i>Lawrence H. Frame and Wm. John Powell, Jr.</i>	269
Myocardial Tissue Recruitment in the Dog as Determined by Double Tracer Dilution Method. <i>Antonio L'Abbate, Richard R. Mildenerberger, Danuta T. Zborowska-Sluis, and Gerald A. Klassen</i>	276
Collecting Duct Function in Deoxycorticosterone Acetate-Escaped, Normal, and Salt-Deprived Rats: Response to Hypervolemia. <i>Harald Sonnenberg</i>	282
Letters to the Editor	289
News from the American Heart Association	291

No. 3 (September)

Maurice B. Visscher at 75—A Life in the Service of Humanity. <i>J. J. Fox</i>	295
Brief Reviews: Heart Size. <i>Lincoln E. Ford</i>	297
The Three-Dimensional Dynamic Geometry of the Left Ventricle in the Conscious Dog. <i>J. Scott Rankin, Philip A. McHale, Carl E. Arentzen, David Ling, Joseph C. Greenfield, Jr., and Robert W. Anderson</i>	304
The Effect of Hypoxia on the Regional Distribution of Cardiac Output in the Dog. <i>Haruhiko Adachi, H. William Strauss, Hironobu Ochi, and Henry N. Wagner, Jr.</i>	314
Enzymatic Properties of Native and <i>N</i> -Ethylmaleimide-Modified Cardiac Myosin from Normal and Thyrotoxic Rabbits. <i>Surath K. Banerjee, Irwin L. Flink, and Eugene Morkin</i>	319
Action Potential Changes under Varied $[Na^+]_0$ and $[Ca^{2+}]_0$ Indicating the Existence of Two Inward Currents in Cells of the Rabbit Atrioventricular Node. <i>Elena Ruiz-Ceretti and Amira Ponce Zumino</i>	326
Low Renal Papillary Plasma Flow in Both Dahl and Kyoto Rats with Spontaneous Hypertension. <i>Mukul Ganguli, Louis Tobian, and Lewis Dahl</i>	337
The Effect of the Pattern of Cardiac Sympathetic Activity on Myocardial Contractile Force and Norepinephrine Overflow in the Dog Heart. <i>Matthew N. Levy and Benjamin Blattberg</i>	341
Interaction of Capillary and Tissue Forces in the Cat Small Intestine. <i>Nicholas A. Mortillaro and Aubrey E. Taylor</i>	348
Transcapillary Escape Rate of Albumin and Right Atrial Pressure in Chronic Congestive Heart Failure before and after Treatment. <i>Birger Hesse, Hans-Henrik Parving, Henrik Lund-Jacobsen, and Ivan Noer</i>	358
Intrarenal Distribution of Blood Flow in Rats Determined by ^{125}I -Iodoantipyrine Uptake. <i>Arvid Hope, Gunnar Clausen, and Knut Aukland</i>	362
Quantification of Collateral Resistance in Acute and Chronic Experimental Coronary Occlusion in the Dog. <i>Wolfgang Schaper, Willem Flameng, Bernd Winkler, Bernd Wüsten, Wolfram Türschmann, Günter Neugebauer, Mechthild Carl, and Stan Pasyk</i>	371
Effects of Treatment with Pyruvate and Tromethamine in Experimental Myocardial Ischemia. <i>A. James Liedtke, Stephen H. Nellis, James R. Neely, and Howard C. Hughes</i>	378
The Role of Cyclic Adenosine 3',5'-Monophosphate and Calcium in the Regulation of Contractility and Glycogen Phosphorylase Activity in Guinea Pig Papillary Muscle. <i>James G. Dobson, Jr., John Ross, Jr., and Steven E. Mayer</i>	388

The Decay of the Potentiated State in Sheep and Calf Ventricular Myocardial Fibers: Influence of Agents Acting on Transmembrane Ca^{2+} Flux. <i>Oskar Bass</i>	396
Chronic One-Kidney Hypertension in Rabbits. II. Evidence for a New Factor. <i>Leonard T. Skeggs, Joseph R. Kahn, Melvin Levine, Frederic E. Dorer, and Kenneth E. Lentz</i>	400
Age-Related Changes in Ouabain Pharmacology: Ouabain Exhibits a Different Volume of Distribution in Adult and Young Dogs. <i>Stanton A. Glantz, Robert Kernoff, and Robert H. Goldman</i>	407
Swine Aortic Smooth Muscle in Tissue Culture: Some Effects of Purified Swine Lipoproteins on Cell Growth and Morphology. <i>B. Greg Brown, Robert Mahley, and Gerd Assmann</i>	415
Effect of Exercise Conditioning on the Intrinsic Contractile State of Cat Myocardium. <i>John F. Williams, Jr., and Ralph D. Potter</i>	425
Effects of Cardiac Sympathetic Stimulation and Ablation on Canine Ventricular Anodal Strength-Interval Curves. <i>Mary Jo Burgess and Herbert J. Levine</i>	429
Cell Permeability, Sodium Transport, and the Hypertensive Process in the Rat. <i>Sydney M. Friedman and Constance L. Friedman</i>	433
Hormonal and Nutritional Substrate Control of Cardiac Lysosomal Enzyme Activities. <i>Kern Wildenthal</i>	441
Suppression of Plasma Renin Activity by Indomethacin in Man. <i>Jürgen C. Frölich, John W. Hollifield, John C. Dormois, Brigitte L. Frölich, Hannsjörg Seyberth, Andrew M. Michelakis, and John A. Oates</i>	447
Red Cell Velocity and Plasma Transit Time in the Cerebral Microcirculation of Spherocytic Deer Mice. <i>William I. Rosenblum</i>	452
Letters to the Editor	455
Errata	457
News from the American Heart Association	458

No. 4 (October)

Brief Reviews: Adrenergic Responses of the Coronary Vessels. <i>Gordon Ross</i>	461
Two Levels of Resting Potential in Canine Cardiac Purkinje Fibers Exposed to Sodium-Free Solutions. <i>Jay R. Wiggins and Paul F. Cranefield</i>	466
Origin of Epicardial ST-T Wave Potentials in the Intact Dog. <i>Madison S. Spach and Roger C. Barr</i>	475
A Comparison of Aortic Baroreceptor Discharge in Normotensive and Spontaneously Hypertensive Rats. <i>Arthur M. Brown, William R. Saum, and Floyd H. Tuley</i>	488
An Electrogenic Sodium Pump and Baroreceptor Function in Normotensive and Spontaneously Hypertensive Rats. <i>William R. Saum, Arthur M. Brown, and Floyd H. Tuley</i>	497
Effect of Variation in Dietary NaCl Intake on Total and Fractional Renal Blood Flow in the Normal and Mercury-Intoxicated Rat. <i>Norbert Lameire, Severin Ringoir, and Isidoor Leusen</i>	506
Effects of Sodium Pentobarbital Anesthesia on Left Ventricular Function and Distribution of Cardiac Output in Dogs, with Particular Reference to the Mechanism for Tachycardia. <i>W. Thomas Manders and Stephen F. Vatner</i>	512
Bioassay in Vivo for Circulating Vasoactive Agents after Renal Artery Constriction in Dogs. <i>Motilal B. Pamnani, Geza Simon, and Henry W. Overbeck</i>	517
Single-Passage Extraction and Permeability Estimation of Sodium in Normal Dog Lungs. <i>Tada Yipintsoi</i>	523

β-Adrenergic Blockade in Essential Hypertension: Reduced Renin Release Despite Renal Vasoconstriction. <i>Jay M. Sullivan, Douglass F. Adams, and Norman K. Hollenberg</i>	532
Gestational Changes in Pulmonary Vascular Responses in Fetal Lambs in Utero. <i>Alan B. Lewis, Michael A. Heymann, and Abraham M. Rudolph</i>	536
Vasomotor Control of Capillary Transit Time Heterogeneity in the Canine Coronary Circulation. <i>Colin P. Rose and Carl A. Goresky</i>	541
Lower Limit of Cerebral Blood Flow Autoregulation in Experimental Renovascular Hypertension in the Baboon. <i>John V. Jones, William Fitch, Eric T. MacKenzie, Svend Strandgaard, and A. Murray Harper</i>	555
The Response of Canine Coronary Vascular Resistance to Local Alterations in Coronary Arterial P_{CO_2}. <i>Robert B. Case and Henry Greenberg</i>	558
Inhibition of Adrenergic Neurotransmission in Canine Vascular Smooth Muscle by Histamine: Mediation by H_2-Receptors. <i>Michael A. McGrath and John T. Shepherd</i>	566
The Effect of Prostaglandin A_1 on Renin and Aldosterone in Man. <i>Michael S. Golub, Paul F. Speckart, Priscilla K. Zia, and Richard Horton</i>	574
Morphology and Relationship to Extensibility Curves of Human Mitral Valve Chordae Tendineae. <i>Koon O. Lim and D.R. Boughner</i>	580
Intact Vesicles of Canine Cardiac Sarcolemma: Evidence from Vectorial Properties of Na^+, K^+-ATPase. <i>Henry R. Besch, Jr., Larry R. Jones, and August M. Watanabe</i>	586
Effects of Sodium Nitroprusside and Nitroglycerin on Tension Prolongation of Cat Papillary Muscle during Recovery from Hypoxia. <i>Bruce R. Brodie, Leonard Chuck, Steven Klausner, William Grossman, and William Parmley</i>	596
Experimental Myocardial Ischemia: Dynamic Alterations in Ventricular Contractility and Relaxation with Dissociation of Speed and Force in the Isovolumic Dog Heart. <i>Juan R. Serur, James R. Galyean, Charles W. Urschel, and Edmund H. Sonnenblick</i>	602
Effect of Steric Restriction on the Intracortical Distribution of Microspheres in the Dog Kidney. <i>Lars Mørkrid, Jarle Ofstad, and Yngvar Willassen</i>	608
Errata	615
News from the American Heart Association	616

No. 5 (November)

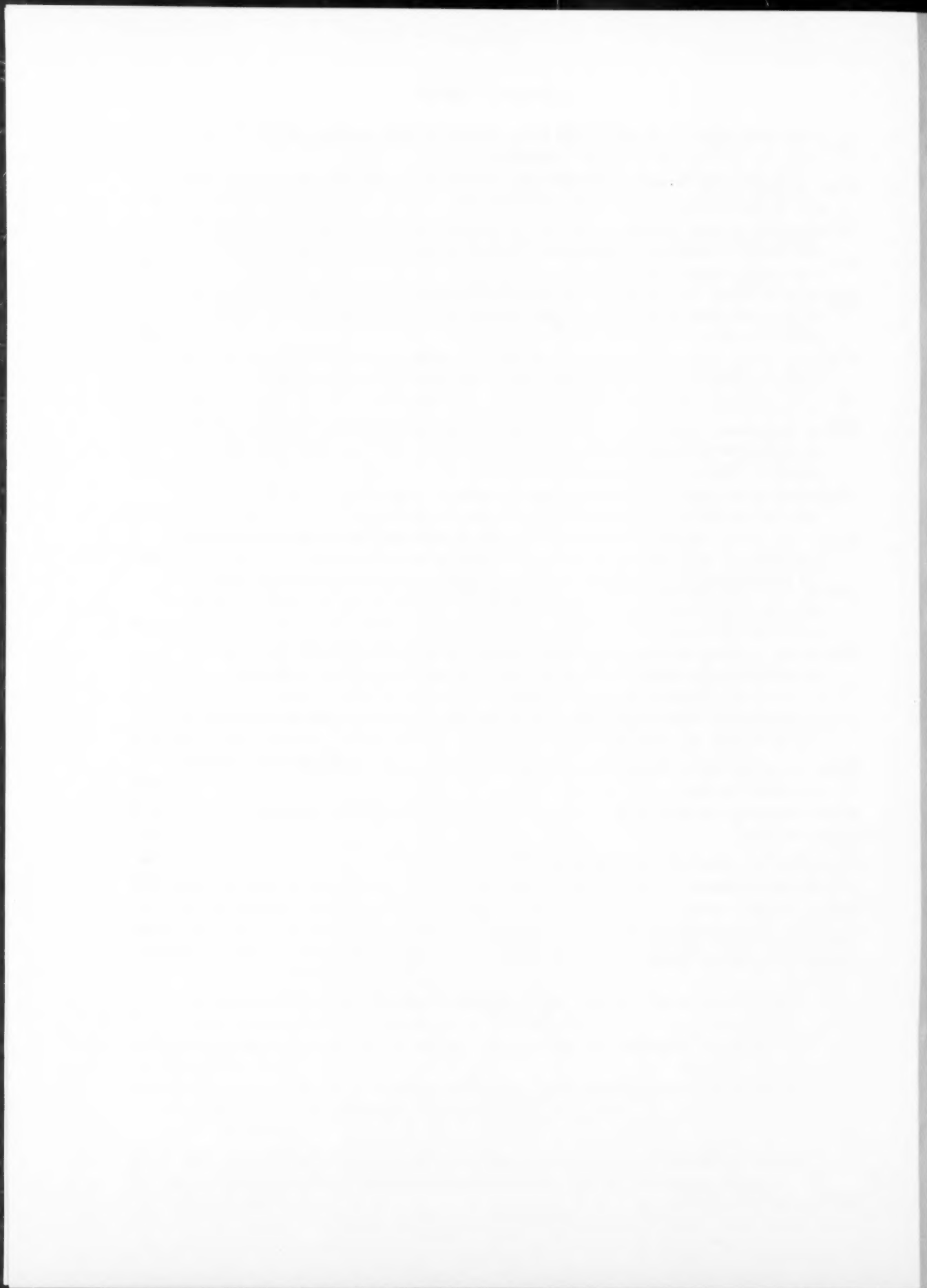
Brief Reviews: Cardiovascular and Renal Effects of Head-Out Water Immersion in Man: Application of the Model in the Assessment of Volume Homeostasis. <i>Murray Epstein</i>	619
Substrate Specificity of Tonin from Rat Submaxillary Gland. <i>Peter W. Schiller, Sylvain Demassieux, and Roger Boucher</i>	629
Changes in Cardiac Output and Total Peripheral Resistance during Development of Renal Hypertension in the Rabbit: Lack of Conformity with the Autoregulation Theory. <i>Peter J. Fletcher, Paul I. Korner, James A. Angus, and Judith R. Oliver</i>	633
Localization of Glucocorticoid Uptake in Normal and Ischemic Myocardial Tissue of Isolated Perfused Cat Hearts. <i>Minoru Okuda, Keith R. Young, Jr., and Allan M. Lefer</i>	640
Effects of Hyperthermic Stress on Myocardial Function during Experimental Coronary Ischemia. <i>A. James Liedtke and Howard C. Hughes</i>	647
Changes in Coronary and Collateral Flows and Adequacy of Perfusion in the Dog following One and Three Months of Circumflex Occlusion. <i>Konrad W. Scheel, Telmo A. Galindez, Billy Cook, Reginald J. Rodriguez, and Leslie A. Ingram</i>	654
Quantification of Human Atrioventricular Nodal Concealed Conduction Utilizing $S_1S_2S_3$ Stimulation. <i>Delon Wu, Pablo Denes, Ramesh C. Dhingra, Christopher R. Wyndham, and Kenneth M. Rosen</i>	659

The Role of Arterial Baroreceptors in the Regulation of Arterial Pressure in Conscious Dogs. <i>Robert J. McRitchie, Stephen F. Vatner, Guy R. Heyndrickx, and Eugene Braunwald</i>	666
Angiotensin II and Its Heptapeptide (2-8), Hexapeptide (3-8), and Pentapeptide (4-8) Metabolites in Arterial and Venous Blood of Man. <i>Peter F. Semple, Alistair S. Boyd, Paul M. Dawes, and James J. Morton</i>	671
Changes in Extracellular Potassium Activity in Response to Decreased pH in Rabbit Atrial Muscle. <i>Robert B. Skinner, Jr., and Diana L. Kunze</i>	678
Myocardial Contractile Function and Myofibrillar Adenosine Triphosphatase Activity in Chemically Sympathectomized Rats. <i>Russell T. Dowell</i>	683
The Effect of an Acute Increase in Renal Perfusion Pressure on Sodium Transport in the Rat Kidney. <i>Robert T. Kunau, Jr., and Norbert H. Lameire</i>	689
The Myocardial Energetic Active State. I. Oxygen Consumption during Tetanus of Cat Papillary Muscle. <i>George Cooper, IV</i>	695
Reflex Vascular Capacity Reduction in the Dog. <i>Carl F. Rothe</i>	705
A Delayed Suppression of the Renin-Aldosterone Axis following Saline Infusion in Human Hypertension. <i>Michael L. Tuck, Gordon H. Williams, Robert G. Dluhy, Martin Greenfield, and Thomas J. Moore</i>	711
Electrophysiological Observations on the Digitalis-Potassium Interaction in Canine Purkinje Fibers. <i>Gary J. Anderson, John C. Bailey, Joseph Reiser, and Alan Freeman</i>	717
Depression and Enhancement of Baroreceptor Pressor Response in Cats after Intracerebro-ventricular Injection of Noradrenergic Blocking Agents: Dependence on Supracollicular Areas of the Brain. <i>A.S. Tadepalli, E. Mills, and S.M. Schanberg</i>	724
Effect of Quinidine and Temperature on Sodium Uptake and Contraction Frequency of Cultured Rat Myocardial Cells. <i>David McCall</i>	730
Inhibition of Feline Collateral Vessel Development following Experimental Thrombotic Occlusion. <i>R.G. Schaub, K.M. Meyers, R.D. Sande, and G. Hamilton</i>	736
The Effects of Iron Deficiency on the Respiratory Function and Cytochrome Content of Rat Heart Mitochondria. <i>Lynda Blayney, Royston Bailey-Wood, Alan Jacobs, Andrew Henderson, and John Muir</i>	744
Erratum	748
News from the American Heart Association	749

No. 6 (December)

Automatic Activity in Depolarized Guinea Pig Ventricular Myocardium: Characteristics and Mechanisms. <i>Sunao Imanishi and Borys Surawicz</i>	751
Phasic Right Coronary Artery Blood Flow in Conscious Dogs with Normal and Elevated Right Ventricular Pressures. <i>Howard S. Lowensohn, Edward M. Khouri, Donald E. Gregg, R. Lee Pyle, and Randolph E. Patterson</i>	760
Reduction in Baroreflex Cardiovascular Responses Due to Venous Infusion in the Rabbit. <i>Henry O. Stinnett, Vernon S. Bishop, and D. Fred Peterson</i>	766
Ventricular Pressure-Volume Curve Indices Change with End-Diastolic Pressure. <i>Stanton A. Glantz</i>	772
Quantification of Baroreceptor Influence on Arterial Pressure Changes Seen in Primary Angiotensin-Induced Hypertension in Dogs. <i>Allen W. Cowley, Jr., and James W. DeClue</i>	779
Acute and Chronic Dose-Response Relationships for Angiotensin, Aldosterone, and Arterial Pressure at Varying Levels of Sodium Intake. <i>Allen W. Cowley, Jr., and Robert E. McCaa</i>	788

The Effect of Cardiac Contraction on Collateral Resistance in the Canine Heart. <i>James M. Downey and Robert W. Chagrasulis</i>	797
Effect of Electrotonic Potentials on Pacemaker Activity of Canine Purkinje Fibers in Relation to Parasystole. <i>Jose Jalife and Gordon K. Moe</i>	801
The Evolution of Early Fibromuscular Lesions Hemodynamically Induced in the Dog Renal Artery. I. Light and Transmission Electron Microscopy. <i>F. Gregory Baumann, Anthony M. Imparato, and Geun-Eun Kim</i>	809
Variations in $^{35}\text{SO}_4$ Incorporation into Glycosaminoglycans along Canine Coronary Arteries: A Possible Index of Artery Wall Stress. <i>Robert J. Boucek, Nancy L. Noble, and David E. Wells</i>	828
Evaluation of the Force-Frequency Relationship as a Descriptor of the Inotropic State of Canine Left Ventricular Myocardium. <i>Page A.W. Anderson, J. Scott Rankin, Carl E. Arentzen, Robert W. Anderson, and Edward A. Johnson</i>	832
Site of Myocardial Infarction: A Determinant of the Cardiovascular Changes Induced in the Cat by Coronary Occlusion. <i>Peter B. Corr, David L. Pearle, John R. Hinton, William C. Roberts, and Richard A. Gillis</i>	840
Intrarenal Site of Action of Calcium on Renin Secretion in Dogs. <i>Barry E. Watkins, James O. Davis, Thomas E. Lohmeier, and Ronald H. Freeman</i>	847
Facial Vein of the Rabbit: Neurogenic Vasodilation Mediated by β-Adrenergic Receptors. <i>Barbara L. Pegram, Rosemary D. Bevan, and John A. Bevan</i>	854
Uptake of Infarct-Imaging Agents in Reversibly and Irreversibly Injured Myocardium in Cultured Fetal Mouse Heart. <i>Heinrich R. Schelbert, Joanne S. Ingwall, Harley D. Sybers, and William L. Ashburn</i>	860
Stimulation of Renin Release from Rabbit Renal Cortex by Arachidonic Acid and Prostaglandin Endoperoxides. <i>P.C. Weber, Carin Larsson, E. Änggård, M. Hamberg, E.J. Corey, K.C. Nicolaou, and B. Samuelsson</i>	868
Investigation of the Theory and Mechanism of the origin of the Second Heart Sound. <i>Hani N. Sabbah and Paul D. Stein</i>	874
Hierarchy of Ventricular Pacemakers. <i>Ronald R. Hope, Benjamin J. Scherlag, Nabil El-Sherif, and Ralph Lazzara</i>	883
Acknowledgment to Reviewers	889
Books Received	891
News from the American Heart Association	892
Volume Author Index	895
Volume Subject Index	897
Supplement Author Index	S-VII
Supplement Subject Index	S-VIII



VOLUME AUTHOR INDEX

- Abraham, S., 231
 Adachi, H., 314
 Adams, D.F., 532
 Alessie, M.A., 168
 Amsterdam, E.A., 127
 Anderson, G.J., 717
 Anderson, R.W., 304, 832
 Anderson, P.A.W., 832
 Ånggård, E., 868
 Angus, J.A., 633
 Arentzen, C.E., 304, 832
 Ashburn, W.L., 860
 Assmann, G., 415
 Aukland, K., 362

 Bailey, J.C., 717
 Bailey-Wood, R., 744
 Banerjee, S.K., 319
 Barr, R.C., 475
 Bass, O., 396
 Baumann, F.G., 809
 Befeler, B., 254
 Besch, H.R., Jr., 586
 Bevan, J.A., 120, 854
 Bevan, R.D., 854
 Bing, K.T., 178
 Bishop, S.P., 238
 Bishop, V.S., 766
 Blanchette-Mackie, E.J., 149
 Blattberg, B., 341
 Blayney, L., 744
 Bobb, G.A., 223
 Bonke, F.I.M., 168
 Boucek, R.J., 828
 Boucher, R., 629
 Boughner, D.R., 209, 580
 Bourgeois, M.J., 15
 Boyd, A.S., 671
 Braunwald, E., 666
 Briggs, J.D., 183
 Brodie, B.R., 596
 Brody, M.J., 191
 Brown, A.M., 488, 497
 Brown, B.G., 415
 Brown, J.J., 183
 Brutsaert, D.L., 42
 Burgess, M.J., 429

 Capponi, A.M., 200
 Caracta, A.R., 223
 Carl, M., 371
 Case, R.B., 558
 Cassanova, R.A., 112
 Chagrasulis, R.W., 797
 Chen, H.I., 245
 Christensen, N.J., 204
 Chuck, L., 596
 Claes, V.A., 42
 Clausen, G., 362
 Cook, B., 654
 Cooper, G., IV, 695
 Corbett, J.L., 204
 Corey, E.J., 868
 Corr, P.B., 840
 Cowley, A.W., Jr., 779, 788
 Cranefield, P.F., 466
 Cuesta, V., 183

 Dahl, L., 337
 Damato, A.N., 223

 Daniel, E.E., 133
 Davis, C.J., 93
 Davis, J.O., 847
 Dawes, P.M., 671
 DeClue, J.W., 779
 Deheneffe, J., 183
 Demassieux, S., 629
 Denes, P., 659
 Dhalla, N.S., 82
 Dhingra, R.C., 659
 Dluhy, R.G., 711
 Dobson, J.G., Jr., 388
 Dorer, F.E., 400
 Dormois, J.C., 447
 Dowell, R.T., 683
 Downey, J., 53
 Downey, J.M., 797

 Ecker, R.R., 231
 Ellison, J.P., 191
 El-Sherif, N., 254, 883
 Epstein, M., 619

 Fitch, W., 555
 Flameng, W., 371
 Fletcher, P.J., 633
 Flink, I.L., 319
 Ford, L.E., 297
 Fox, I.J., 295
 Frame, L.H., 269
 Frankel, H.L., 204
 Farrar, J.K., 33
 Fraser, R., 183
 Freeman, A., 717
 Freeman, R.H., 847
 Freer, R.J., 178
 Friedman, C.L., 433
 Friedman, S.M., 433
 Frölich, B.L., 447
 Frölich, J.C., 447

 Galindez, T.A., 654
 Galyean, J.R., 602
 Ganguli, M., 337
 Giddens, D.P., 112
 Gilbert, B.K., 15
 Gillis, R.A., 455, 840
 Glantz, S.A., 407, 772
 Goldman, R.H., 407
 Golub, M.S., 574
 Goresky, C.A., 541
 Graham, D.I., 33
 Granger, H.J., 245
 Greenberg, H., 558
 Greenberg, S., 66
 Greenfield, J.C., Jr., 304
 Greenfield, M., 711
 Gregg, D.E., 760
 Grossman, W., 596

 Hamberg, M., 868
 Hamilton, G., 736
 Harper, A.M., 33, 555
 Henderson, A., 744
 Henry, P.D., 24
 Hesse, B., 358
 Heymann, M.A., 536
 Heyndrickx, G.R., 666
 Hibbs, R.G., 191
 Hinton, J.R., 840

 Hirzel, H.O., 214
 Hoffman, B.F., 1
 Hoffman, E.J., 24
 Hollenberg, N.K., 532
 Hollifield, J.W., 447
 Hope, A., 362
 Hope, R.R., 883
 Horton, R., 574
 Hughes, H.C., 378, 647
 Hyman, A.L., 191

 Imanishi, S., 751
 Imperato, A.M., 809
 Ingram, L.A., 654
 Ingwall, J.S., 860

 Jacobs, A., 744
 Jalife, J., 801
 James, T.N., 76
 Janis, R.A., 133
 Joiner, P.D., 191
 Johnson, E.A., 832
 Jones, L.R., 586
 Jones, J.V., 33, 555

 Kadowitz, P.J., 66, 191
 Kahn, J.R., 400
 Kernoff, R., 407
 Khouri, E.M., 93, 760
 Kim, G.-E., 809
 Kirk, E.S., 214
 Klassen, G.A., 276
 Klausner, S., 596
 Knight, D.S., 191
 Korner, P.I., 633
 Kuchel, O., 289
 Kunau, R.T., Jr., 689
 Kunze, D.L., 678

 L'Abbate, A., 276
 Lameire, N., 506
 Lameire, N.H., 689
 Larsson, C., 868
 Lau, S.H., 223
 Lazzara, R., 254, 883
 Lee, S.L., 82
 Lee, T.J.-F., 120
 Lefer, A.M., 640
 Lentz, K.E., 400
 Leusen, I., 506
 Lever, A.F., 183
 Levine, H.J., 429
 Levine, M., 400
 Levy, M.N., 341
 Lewis, A.B., 536
 Liedtke, A.J., 378, 647
 Lim, K.O., 209, 580
 Ling, D., 304
 Lohmeier, T.E., 847
 Long, J.P., 66
 Lowensohn, H.S., 760
 Lund-Jacobsen, H., 358

 Mabon, R.F., 112
 MacKenzie, E.T., 33, 555
 Mahley, R., 415
 Malik, K.U., 163
 Manders, W.T., 512
 Mason, D.T., 127
 Mathias, C.J., 204

- Mayer, S.E., 388
 McCaa, R.E., 788
 McCall, D., 730
 McGiff, J.C., 163
 McGrath, M.A., 566
 McHale, P.A., 304
 McLean, M.J., 178
 McRitchie, R.J., 455, 666
 Melsen, L.R., 238
 Meyers, K.M., 736
 Michelakis, A.M., 447
 Mildemberger, R.R., 276
 Miller, R.R., 127
 Mills, E., 724
 Moe, G.K., 801
 Moore, T.J., 711
 Moretti, R.L., 231
 Morkin, E., 319
 Mørkrid, L., 608
 Mortillaro, N.A., 348
 Morton, J.J., 183, 671
 Muir, J., 748

 Neely, J.R., 141, 378
 Nellis, S.H., 378
 Nelson, G.R., 214
 Neugebauer, G., 371
 Nicolaou, K.C., 868
 Noble, N.L., 828
 Noer, I., 358

 Oates, J.A., 447
 Ochi, H., 314
 Ofstad, J., 608
 Okuda, M., 640
 Oliver, J.R., 633
 Olsson, R.A., 93
 Overbeck, H.W., 517

 Pamnani, M.B., 517
 Pappano, A.J., 99, 178
 Parmley, W., 596
 Parving, H.-H., 358
 Pasyk, S., 371
 Patterson, R.E., 93, 760
 Paulus, W.J., 42
 Peach, M.J., 178
 Pearle, D.L., 840
 Pegram, B.L., 854
 Peterson, F., 766
 Phelps, M.E., 24
 Poole-Wilson, P.A., 141
 Potter, R.D., 425
 Powell, W.J., Jr., 269
 Pyle, R.L., 760

 Quest, J.A., 455

 Rankin, J.S., 304, 832
 Reiser, J., 717
 Ringoir, S., 506
 Roberts, W.C., 840
 Robertson, J.I.S., 183
 Rodriguez, R.J., 654
 Rose, C.P., 541
 Rosen, K.M., 659
 Rosen, M.R., 1
 Rosenblum, W.I., 452
 Ross, G., 461
 Ross, J., Jr., 388
 Rothe, C.F., 705
 Rudolph, A.M., 536
 Ruiz-Ceretti, E., 326
 Ryan, P., 163

 Sabbah, H.N., 58, 874
 Samuelsson, B., 868
 Sande, R.D., 736
 Saum, W.R., 488, 497
 Schanberg, S.M., 724
 Schaper, W., 371
 Schaub, R.G., 736
 Scheel, K.W., 654
 Schelbert, H.R., 860
 Scherlag, B.J., 254, 883
 Schiller, P.W., 629
 Schopman, F.J.G., 168
 Schwartz, A., 2
 Scow, R.O., 149
 Semple, P.F., 671
 Serur, J.R., 602
 Seyberth, H., 447
 Shepherd, J.T., 566
 Shiner, J.S., 8
 Simon, G., 517
 Skeggs, L.T., 400
 Skinner, R.B., Jr., 678
 Smith, L.C., 149
 Sobel, B.E., 24
 Solaro, R.J., 8
 Sonnenberg, H., 282
 Sonnenblick, E.H., 214, 602
 Spach, M.S., 475
 Spalding, J.M.K., 204
 Speckart, P.F., 574
 Sperelakis, N., 178
 Stein, P.D., 58, 874
 Stinnett, H.O., 766
 Strandgaard, S., 33, 555
 Strauss, H.W., 314
 Su, C., 120

 Sullivan, J.M., 532
 Surawicz, B., 751
 Sybers, H.D., 860

 Tadepalli, A.S., 724
 Tarr, M., 106
 Taylor, A.E., 245, 348
 Ter-Pogossian, M.M., 24
 Ticzon, A.R., 223
 Tobian, L., 337
 Tomlinson, C.W., 82
 Trank, J.W., 106
 Tree, M., 183
 Tuck, M.L., 711
 Tuley, F.H., 488, 497
 Türschmann, W., 371

 Urschel, C.W., 602
 Urthaler, F., 76

 Vallotton, M.B., 200
 Vanhoutte, P.M., 263
 Vatter, S.F., 455, 512, 666
 Verbeuren, T.J., 263
 Vismara, L.A., 127
 Vogel, S., 178
 von Bernuth, G., 15

 Wagner, H.N., Jr., 314
 Watanabe, A.M., 586
 Watkins, B.E., 847
 Weber, P.C., 868
 Wei, J.-W., 133
 Weiss, E.S., 24
 Welch, M.J., 24
 Wells, D.E., 828
 Wiggins, J.R., 466
 Wildenthal, K., 441
 Willassen, Y., 608
 Williams, D.O., 127
 Williams, G.H., 711
 Williams, J.F., Jr., 425
 Wilson, W.R., 66
 Winkler, B., 371
 Wood, E.H., 15
 Woods, W.T., 76
 Wu, D., 659
 Wüsten, B., 371
 Wyndham, C.R., 659

 Yipintsoi, T., 523
 Young, K.R., Jr., 640

 Zborowska-Sluis, D.T., 276
 Zia, P.K., 574
 Zumino, A.P., 326

Circulation Research

VOLUME 39

JULY-DECEMBER 1976

VOLUME SUBJECT INDEX

A

- Acetoacetate**
effects on cardiac lysosomal enzyme activities (fetal mouse), 441
- Acetylcholine**
effect on pulmonary vascular responses in fetal lambs in utero, 536
inhibition of potassium-induced norepinephrine release in saphenous vein (dog), 263
- β -Acetylglucosaminidase**
lysosomal, hormonal and nutritional substrate control (fetal mouse), 441
- Acetylcholine**
and potassium, interaction in Purkinje fibers (dog), 717
- Acid phosphatase**
lysosomal, hormonal and nutritional substrate control (fetal mouse), 441
- Action potentials** (see Potentials)
- Acute renal failure** (see Kidney)
- Adenosine**
receptor, on surface of coronary myocytes (dog), 93
- Adenosine 3',5'-monophosphate**
cyclic, role in regulation of contractility and glycogen phosphorylase activity in papillary muscle (guinea pig), 388
- Adenosine triphosphatase** (see also Sodium-potassium-ATPase) activity
in genetically hypertensive rat, 133
in myofibrillar calcium control (dog and rabbit), 8
myofibrillar, in sympathectomized rats, 683
in infective cardiomyopathy (rabbit), 82
of myosin, activity (rabbit), 319
- Adenosine triphosphate**
activity, in intact sarcolemmal vesicles (dog), 586
in infective cardiomyopathy (rabbit), 82
- S-Adenosylmethionine**
¹⁴C-labeled, activity in facial vein (rabbit), 854
- Adenylate cyclase**
in infective cardiomyopathy (rabbit), 82
- Adipose tissue**
chylomicrons, 149
- Adrenalectomy**
in study of renin release by rat kidney slices in vitro, 200
- Adrenergic agents**
effect on coronary flow distribution, 461
- Adrenergic agonists**
classification, 461
- Adrenergic amines**
coronary responses, 461
- Adrenergic antagonists**
classification, 461
- β -Adrenergic blockade**
effects on ventricular pacemakers, 883
in essential hypertension, renin release in, 532
- Adrenergic blocking agents**
classification, 461
- α -Adrenergic blocking agents**
basilar artery response (rabbit), 120
effect on baroreceptor pressor response (cat), 724
- Adrenergic nerves**
terminals, in pulmonary vascular bed, effects of 5- and 6-hydroxydopamine on morphology (dog), 191
- Adrenergic neurotransmission**
in vascular smooth muscle
inhibition by histamine (dog), 566
mediation by H₂-receptors (dog), 566
inhibition, effects of acetylcholine (dog saphenous vein), 263
pulmonary vascular bed, effects of 5- and 6-hydroxydopamine (dog), 191
- Adrenergic receptors** (see Receptors)
- Adrenergic responses**
coronary, review, 461
in low renin and normal renin essential hypertension (letter to editor), 289
- Adrenergic stimuli**
vasoconstrictor responses of mesenteric arteries (rabbit and rat), 163
- Adrenotropic receptors** (see Receptors)
- Albumin**
¹²⁵I-labeled, in study of coronary capillary transit time heterogeneity (dog), 541
¹³¹I-labeled
in study of lung capillary permeability (dog), 523
in study of myocardial tissue recruitment (dog), 276
transcapillary escape rate, in chronic congestive heart failure, 358
- Aldosterone** (see also Renin-aldosterone)
and angiotensin, dose-response relationships at varying levels of sodium intake (dog), 788
effects of indomethacin in man, 447
plasma, effects of water immersion, 619
response to angiotensin II infusion in anephric man, effect of sodium deprivation, 181
responses to prostaglandin A₁, 574
- Amino acids**
in study of substrate specificity of tonin (rat), 629
- Anesthesia**
sodium pentobarbital, effects on ventricular function, cardiac output, and tachycardia (dog), 512
- Angiotensin** (see also Renin-angiotensin-aldosterone system)
in study of indomethacin effects on plasma renin activity, in man, 447
induced hypertension, effect on cerebral circulation (cat), 33
- Angiotensin I**
des-Asp¹-, as substrate of tonin, 629
des-Asp¹,des-Arg²-, as substrate of tonin, 629
in study of renin release by rat kidney slices in vitro, 200
peptides, as substrates of tonin from submaxillary gland (rat), 629
- Angiotensin II**
aldosterone and blood pressure responses, in anephric man, effect of sodium deprivation, 183
and aldosterone, dose-response relationship (dog), 788
and arterial pressure, dose-response relationship (dog), 788
and its immunoreactive metabolites, in arterial and venous blood of man, 671
des-Asp¹-, positive inotropic effect on cardiac muscle (rabbit, guinea pig, and chick), 178
effects on renin-aldosterone responses to prostaglandin A₁, 574
hypertension induced by
aldosterone plasma levels in (dog), 788
baroreceptor influence on arterial pressure changes (dog), 779
positive inotropic effect on cardiac muscle (mammals and chick embryo), 178
Sar¹-, positive inotropic effect on cardiac muscle (rabbit, guinea pig, and chick), 178
Sar¹-Ala⁸-, positive inotropic effects on cardiac muscle (rabbit, guinea pig, chick embryo), 178
Sar¹-Ile⁸-, positive inotropic effect on cardiac muscle (rabbit, guinea pig, and chick embryo), 178
- Angiotensin II amide**
in study of vascular smooth muscle prostaglandin receptors (dog and rabbit), 66
- Animal models** (see Models)
- Animal studies (baboon)**
cerebral autoregulation in renovascular hypertension, 555

Animal studies (calf)transmembrane Ca^{2+} flux and tension, 396**Animal studies (cat)**

baroreceptor pressor response, effect of intracerebroventricular injection of noradrenergic blocking agents, 724

cardiac hypertrophy induced by sudden pressure overload, 238

cardiac muscle, isolated, physiological loading, 43

collateral vessel development, inhibition following thrombotic occlusion, 736

exercise conditioning, effect on contractile state of myocardium, 425

glucocorticoid uptake in myocardial ischemia, 640

hypertension, acute, effects on cerebral circulation, 33

intestinal capillary and tissue forces, interaction, 348

myocardial energetic active state, 695

myocardial infarction site as determinant of cardiovascular changes induced by coronary occlusion, 840

oxygen consumption during tetanus of papillary muscle, 695

sodium nitroprusside and nitroglycerine effects on tension prolongation of papillary muscle during recovery from hypoxia, 596

Animal studies (chick embryo)

action potentials, atrial, 99

positive inotropic effect of angiotensin II on cardiac muscle, 178

Animal studies (deer mouse)

cerebral microcirculation, red cell velocity, and plasma transit time in, 452

Animal studies (dog)

acetylcholine inhibition of norepinephrine release, in saphenous vein, 263

action potentials, sinus node, 76

adrenergic neurotransmission, inhibition in vascular smooth muscle by histamine, mediation by H_2 -receptors, 566

adenosine receptor on surface of coronary myocyte, 93

arterial baroreceptors in regulation of arterial pressure, 666

atrioventricular nodal gap, the 1, 2, 3, 4 phenomenon, 223

baroreceptor influence on arterial pressure in angiotensin-induced hypertension, 779

beat-to-beat stroke volume, continuous determination from aortic pressure pulses, 15

capillary, interstitial, and lymphatic forces in hindpaw, interaction, 245

cardiac contraction, effect on collateral resistance, 797

cardiac sarcolemmal vesicles, intact, Na^+ , K^+ -ATPase studies, 586

cardiac sympathetic activity, effect on myocardial contractile force and norepinephrine overflow, 341

collateral resistance in coronary occlusion, 371

coronary and collateral flows and adequacy of perfusion following circumflex occlusion, 654

coronary blood flow, right, phasic, in conscious dogs with normal and elevated right ventricular pressures, 760

coronary capillary transit time heterogeneity, vasomotor control, 541

coronary compression during fibrillation, 53

coronary vascular resistance, response to local alterations in coronary arterial Pco_2 , 558

digitalis-potassium interaction in Purkinje fibers, 717

dose-response relationships for angiotensin, aldosterone, and arterial pressure, 788

electrotonic potentials, effect on pacemaker activity of Purkinje fibers in relation to parasystole, 801

epicardial ST-T wave potentials, origin, 475

fibromuscular lesions of renal artery, hemodynamically induced, 809

flow disorders distal to stenoses, 112

force-frequency relationship as descriptor of inotropic state of myocardium, 832

hydroxydopamine effects on adrenergic transmission and nerve terminal morphology in pulmonary vascular bed, 191

hypoxia, effect on regional distribution of cardiac output, 314

lung capillary permeability, 523

microsphere distribution, steric restriction, 608

myocardial ischemia

dynamic alterations in contractility and relaxation with dissociation of speed and force, 602

external detection with ^{14}C -substrates, 24

perfusion impairment, 269

myocardial tissue recruitment, double tracer dilution method, 276

myofibrillar calcium control by Mg^{2+} , 8

ouabain pharmacology, age-related changes, 407

pentobarbital anesthesia, effects on ventricular function, distribution of cardiac output, and tachycardia, 512

prostaglandin receptor in vascular smooth muscle, 66

Purkinje fibers, resting potentials, two levels, effect of sodium-free solutions, 466

redistribution of collateral blood flow after coronary occlusion, 214

reflex vascular capacity reduction, 705

refractoriness in ventricular conduction system, gate hypothesis, 254

renin secretion, intrarenal site of action of calcium, 847

second heart sound, theory and mechanism of origin, 874

single-passage extraction and permeability estimation of sodium in normal lungs, 523

 $^{35}\text{SO}_4$ incorporation into glycosaminoglycans along coronary arteries, as index of wall stress, 828

strength-interval curves, effects of cardiac sympathetic stimulation and ablation, 429

vasoactive agents after renal artery constriction, bioassay, 517

ventricle, left, three-dimensional dynamic geometry, 304

ventricular pacemakers, hierarchy of, 883

ventricular pressure-volume curve indices, change with end-diastolic pressure, 772

tension-voltage determinations on atrial muscle, double sucrose gap voltage clamp technique, 106

Animal studies (guinea pig)

automatic activity in depolarized ventricular myocardium, 751

papillary muscle, regulation of contractility and glycogen phosphorylase activity, 389

positive inotropic effect of angiotensin II on cardiac muscle, 178

Animal studies (lamb, fetal)

pulmonary vascular response, gestational changes in utero, 536

Animal studies (mammalian)

cardiac muscle, isolated, physiological loading, 42

Animal studies (mouse)

cardiac lysosomal enzyme activities, hormonal and nutritional substrate control (fetal mouse), 441

infarct-imaging agents, uptake in injured myocardium in cultured fetal mouse heart, 860

Animal studies (rabbit)

action potential changes indicating existence of two inward currents in atrioventricular junction, 326

baroreflex attenuation by infusion, 766

basilar artery, neurogenic sympathetic vasoconstriction, 120

cardiac hypertrophy induced by sudden pressure overload, 238

cardiac output and peripheral resistance during renal hypertension, 633

cardiomyopathy, infective, abnormalities in heart membranes and myofibrils during, 82

circus movement in atrial muscle as a mechanism of tachycardia, 168

facial vein, neurogenic vasodilation mediated by β -adrenergic receptors, 854

hypertension, one-kidney, new factor in, 396

mesenteric artery, vasoconstrictor response to adrenergic stimuli, 163

myocardial ischemia, external detection with ^{14}C -substrates, 24myofibrillar calcium control by Mg^{2+} , 8

myosin, cardiac, enzymatic properties, 319

myosin ATPase, regulation by thyroxine, 319

positive inotropic effect of angiotensin II on cardiac muscle, 178

- potassium, extracellular, response to decreased pH in atrial muscle, 678
- prostaglandin production, cardiac, stimulation by blood plasma and relationship to coronary flow, 231
- prostaglandin receptor in vascular smooth muscle, 66
- renin release from renal cortex, stimulation by arachidonic acid and prostaglandin endoperoxides, 868
- Animal studies (rat)**
- aortic baroreceptor discharge in normotensive and spontaneously hypertensive rats, 448
- cell permeability, sodium transport, and the hypertensive process, 433
- chylomicron clearance, role of capillary endothelium, 149
- collecting duct transport in hypervolemia, 282
- electrogenic sodium pump and baroreceptor function in normotensive and spontaneously hypertensive rats, 497
- genetically hypertensive, calcium accumulation and enzymatic activities, 133
- iron deficiency, effects on respiratory function and cytochrome content of cardiac mitochondria, 744
- myocardial cells, sodium uptake and contraction frequency, effect of quinidine and temperature, 730
- myocardial contractile function and myofibrillar ATPase activity after sympathectomy, 683
- renal blood flow
- determined by ^{125}I -iodoantipyrine uptake, 362
- effect of NaCl and mercury intoxication, 506
- renal papillary plasma flow in spontaneous hypertension, 337
- renal perfusion pressure increase, effect on renal sodium transport, 689
- renin release by kidney slices in vitro, role of sodium and adrenergic receptors and effect of vincristine, 200
- substrate specificity of tonin from submaxillary gland, 629
- vasoconstrictor response of mesenteric artery to adrenergic stimuli, 163
- Animal studies (sheep)**
- transmembrane Ca^{2+} flux and tension, 396
- Animal studies (swine)**
- aortic smooth muscle cells, effects of lipoproteins, 415
- hyperthermic stress, effects on myocardial function during coronary ischemia, 647
- myocardial ischemia, pyruvate and tromethamine treatment, 378
- Anti-G suit**
- inflation for induction of central hypervolemia, 619
- Antipyrine**
- ^{125}I -labeled
- in determination of intrarenal distribution of blood flow (rat), 362
- in study of myocardial tissue recruitment (dog), 276
- Antirenin**
- effects
- after renal artery constriction (dog), 517
- in one-kidney hypertension (rabbit), 396
- Aorta**
- ascending, turbulent blood flow, in humans, 58
- banding, in production of cardiac hypertrophy (cat and rabbit), 238
- baroreceptors (see Receptors)
- calcium accumulation in genetically hypertensive rat, 133
- enzymatic activities in genetically hypertensive rat, 133
- occlusion, effect on collateral vessel development (cat), 736
- pressure, phasic right coronary blood flow and (conscious dog), 760
- pressure pulse, determination of stroke volume from (dog), 15
- smooth muscle cells
- effects of lipoproteins (swine), 415
- ultrastructure (swine), 415
- stenosis, second heart sound in, 874
- thoracic, measurement of disordered flow distal to stenoses (dog), 112
- Aortic arch-aortic nerve**
- preparation, for study of baroreceptor discharge (rat), 488
- Aortic nerve**
- histology, 488
- stimulation, baroreflex responses to venous infusion (rabbit), 766
- Aortic valves**
- diseased and normal, turbulent blood flow associated with (human), 59
- dynamic viscoelasticity (human), 209
- Arachidonic acid**
- effects on mesenteric artery vasoconstrictor response to adrenergic stimuli (rabbit and rat), 163
- in study of cardiac prostaglandin production (rabbit), 231
- stimulation of renin release from renal cortex (rabbit), 868
- Arrhythmias**
- effect of site of myocardial infarction induced by coronary occlusion (cat), 840
- Arterial baroreceptors** (see Receptors)
- Arterial pressure** (see Pressure)
- Atherosclerosis**
- renal artery, hemodynamically induced (dog), 809
- ATP** (see Adenosine triphosphate)
- ATPase** (see Adenosine triphosphatase)
- Atria**
- action potentials, tetrodotoxin-resistant, ontogenetic changes in dependence on calcium, strontium, and barium (chick embryo), 99
- muscle (see Muscle)
- potentials, effects of extracellular potassium (rabbit), 678
- pressure, in congestive heart failure, 358
- Atrioventricular conduction** (see Conduction)
- Atrioventricular junction**
- two inward currents (rabbit), 326
- Atrioventricular nodal gap**
- mechanism (dog), 223
- the 1, 2, 3, 4 phenomenon (dog), 223
- Atropine**
- in study of acetylcholine inhibition of potassium-induced norepinephrine release (dog saphenous vein), 263
- effects on pentobarbital-induced tachycardia (dog), 512
- Automatcity**
- of depolarized ventricular myocardial fibers (guinea pig), 751
- Autonomic nervous system**
- blockade, effects on reflex vascular capacity (dog), 705
- Autoradiography**
- cardiac hypertrophy (cat and rabbit), 238
- Autoregulation** (see Blood flow)

B

- Barium**
- action potential dependency on (chick embryo), 99
- Baroreceptors** (see Receptors)
- Baroreflex responses**
- cardiovascular, to venous infusion (rabbit), 766
- Basement membrane**
- hemodynamically induced fibromuscular lesions of renal artery (dog), 809
- Basilar artery**
- fluorescence histochemical study (rabbit), 120
- neurogenic sympathetic vasoconstriction (rabbit), 120
- Blood**
- arterial and venous, angiotensin II and its immunoreactive metabolites in, 671
- Blood-brain barrier**
- in acute hypertension (cat), 33
- Blood flow**
- autoregulation theory, in renal hypertension (rabbit), 633
- cerebral
- autoregulation in renovascular hypertension (baboon), 555
- in acute hypertension (cat), 33
- collateral, redistribution in myocardium following coronary occlusion (dog), 214
- collateral resistance, in coronary occlusion (dog), 371

- coronary
 - and cardiac prostaglandin production, relationship (rabbit), 231
 - autoregulation, double tracer dilution study (dog), 276
 - effect of adrenergic agents, 461
 - regulation, effect of blood plasma (rabbit), 231
 - right, phasic, in conscious dogs with normal and elevated right ventricular pressures, 760
 - coronary and collateral, following circumflex occlusion (dog), 654
 - disordered, distal to stenoses in thoracic aorta (dog), 112
 - intrarenal, determined by ^{125}I -iodoantipyrine uptake (rat), 362
 - renal
 - effect of dietary NaCl (rat), 506
 - in mercury intoxication (rat), 506
 - retrograde, collateral resistance and (dog), 797
 - turbulent, in ascending aorta of humans, 58
 - Blood gases**
 - in hypoxia (dog), 314
 - Blood pressure** (see Pressure)
 - Blood velocity**
 - distal to stenoses in thoracic aorta, measurement of (dog), 112
 - Body fluid compartments**
 - redistribution in head-out water immersion, 619
 - Brain**
 - supracollicular areas, role in baroreceptor pressor response to noradrenergic blocking agents (cat), 724
 - Bretylium tosylate**
 - basilar artery contractile response (rabbit), 120
- C**
- Calcium**
 - accumulation, in genetically hypertensive rats, 133
 - action potential dependency on (chick embryo), 99
 - binding, in infective cardiomyopathy (rabbit), 82
 - effects
 - on automaticity in depolarized myocardium (guinea pig), 751
 - on myosin ATPase activity (rabbit), 319
 - on Na^+K^+ -ATPase, 2
 - on Purkinje fiber potentials (dog), 466
 - extracellular concentration, effect on atrioventricular nodal action potentials (rabbit), 326
 - intrarenal site of action on renin secretion (dog), 847
 - myofibrillar, control by Mg^{2+} (dog and rabbit), 8
 - role in regulation of contractility and glycogen phosphorylase activity in papillary muscle (guinea pig), 388
 - slow inward current, in double sucrose gap voltage clamp technique (frog), 106
 - transmembrane flux, in ventricular myocardial fibers, influence of various agents (sheep and calf), 396
 - uptake, in injured myocardium (fetal mouse), 860
 - Capillary endothelium**
 - morphology (rat), 149
 - role in clearance of chylomicrons (rat), 149
 - Capillary forces**
 - and tissue forces, intestinal, interaction (cat), 348
 - interaction with interstitial and lymphatic forces (dog hind-paw), 245
 - Capillary permeability**
 - of sodium, in normal lung (dog), 523
 - Capillary transit time**
 - coronary, vasomotor control (dog), 541
 - Carbon dioxide pressure**
 - alterations, effect on coronary vascular resistance (dog), 558
 - Cardiac output**
 - during renal hypertension (rabbit), 633
 - effect of site of myocardial infarction induced by coronary occlusion (cat), 840
 - effect of sodium pentobarbital anesthesia (dog), 512
 - phasic right coronary blood flow and (conscious dog), 760
 - regional distribution, effect of hypoxia (dog), 314
 - Cardiac unloading therapy**
 - in clinical congestive heart failure, pharmacological mecha-

- nisms, 127
- Cardiomyopathy**
 - infective, abnormalities in heart membranes and myofibrils during (rabbit), 82
 - ventricular pressure-volume curve and (dog), 772
- Cardiovascular system**
 - baroreflex responses to venous infusion (rabbit), 766
 - changes induced by coronary occlusion, site of myocardial infarction as a determinant of (cat), 840
 - effects of head-out water immersion, 619
 - function, effects of sodium pentobarbital anesthesia (dog), 512
 - model, for investigation of second heart sound, 874
 - response to cardiac glycoside, role of arterial baroreceptors (letter to editor), 455
- Carotid occlusion**
 - in study of effect of perfusion pressure on renal sodium transport (rat), 689
- Catecholamines**
 - plasma, during paroxysmal neurogenic hypertension in quadriplegic man, 204
- Catechol O-methyltransferase**
 - activity, in facial vein (rabbit), 854
- Cathepsin D**
 - lysosomal, hormonal and nutritional substrate control (fetal mouse), 441
- Cell membrane**
 - Na^+K^+ -ATPase system, as pharmacological receptor for digitoxin, 2
- Cell permeability**
 - in hypertension (rat), 433
- Cerebral arteries**
 - innervation, morphology (rabbit), 120
- Cerebral blood flow**
 - autoregulation, in renovascular hypertension (baboon), 555
 - in acute hypertension (cat), 33
- Cerebral circulation**
 - in acute hypertension (cat), 33
- Cerebral microcirculation**
 - red cell velocity and plasma transit time in (deer mouse), 452
- Cerium-141 studies**
 - effect of dietary NaCl and mercury intoxication on renal blood flow (rat), 506
- Cholesterol**
 - lipoprotein, effect on aortic smooth muscle cells (swine), 415
 - transport across capillary endothelium (rat), 149
- Chordae tendineae**
 - morphology and relation to extensibility curves, 580
 - scanning electron microscopic studies, 580
- Chylomicrons**
 - clearance, role of capillary endothelium (rat), 149
 - composition, 149
- Circumflex artery**
 - occlusion, effect on coronary and collateral flows (dog), 654
- Circus movement**
 - in atrial muscle, as a mechanism of tachycardia (rabbit), 168
- Cobalt ions**
 - influence on Ca^{2+} transmembrane flux in myocardial fibers (sheep and calf), 396
- Cocaine**
 - basilar artery contractile response (rabbit), 120
 - effect on cardiac norepinephrine overflow (dog), 341
- Collagen fibers**
 - in chordae tendineae, morphology, 580
- Collateral resistance** (see Resistance)
- Collateral vessels**
 - development, inhibition following thrombotic occlusion (cat), 736
- Collecting ducts**
 - function, in hypervolemia (rat), 282
- Compliance, ventricular**
 - pressure-volume curve and (dog), 772
 - vasodilators and (cat), 596
- Computer studies**
 - origin of epicardial ST-T wave potentials (dog), 475

- ventricular pressure-volume curve indices, change with end-diastolic pressure (dog), 772
- Conduction**
- atrioventricular
 - concealed (dog), 223
 - dual pathways (dog), 223
 - effect of site of myocardial infarction induced by coronary occlusion (cat), 840
 - atrioventricular nodal, concealed, quantification utilizing $S_1S_2S_3$ stimulation, 659
 - block, and nonuniform recovery of excitability in tachycardia (rabbit), 168
 - velocity, aortic baroreceptor fibers, 488
 - ventricular
 - refractoriness, gate hypothesis (dog), 254
 - specialized system, pacemakers and, 883
- Contraction** (see Muscle)
- Coronary artery**
- blood flow (see Blood flow)
 - carbon dioxide pressure, effect on coronary vascular resistance (dog), 558
 - compression, by fibrillating heart (dog), 53
 - disease, ventricular pressure-volume curve and (dog), 772
 - occlusion
 - cardiovascular changes induced by, site of myocardial infarction as a determinant of (cat), 840
 - collateral resistance in (dog), 371
 - redistribution of collateral blood flow following (dog), 214
 - tissue volume, in myocardial tissue recruitment (dog), 276
 - vasoconstriction, in study of cardiac prostaglandin production (rabbit), 231
 - wall stress, $^{35}\text{SO}_4$ incorporation into glycosaminoglycans as index of (dog), 828
- Coronary circulation**
- capillary transit time heterogeneity, vasomotor control (dog), 541
- Coronary ischemia**
- and hyperthermic stress, effects on myocardial function (swine), 647
- Coronary myocytes**
- adenosine receptor (dog), 93
- Coronary vascular resistance**
- effect of prolonged low flow in myocardial ischemia (dog), 269
 - response to local alterations in coronary arterial Pco_2 (dog), 558
- Coronary vessels**
- adrenergic responses, review, 461
- Cortisol**
- plasma
 - effects of angiotensin (dog), 788
 - responses to prostaglandin A_1 , 574
- Creatine phosphokinase**
- assay, in study of collateral blood flow redistribution after coronary occlusion (dog), 214
- Cyclic AMP** (see Adenosine 3',5'-monophosphate)
- Cytochromes**
- mitochondrial, effects of iron deficiency (rat), 744

D

- Deoxycholate**
- in study of intact cardiac sarcolemmal vesicles (dog), 586
- Deoxycorticosterone**
- effect
 - on collecting duct function in hypervolemia (rat), 282
 - on renal sodium handling during water immersion, 619
- Deoxyribonucleic acid**
- synthesis, in cardiac hypertrophy induced by pressure overload (cat and rabbit), 238
- Depolarization**
- rhythmic automatic, in ventricular myocardium (guinea pig), 751
 - two components of, in atrioventricular junction (rabbit), 326
- Desipramine**

- basilar artery contractile response (rabbit), 120
- Detergents**
- effects on permeability of sarcolemmal vesicles (dog), 586
- Dexamethasone**
- ^3H -labeled, uptake in myocardial ischemia (cat), 640
- Digitalis**
- and Na^+K^+ -ATPase, interaction, 2
 - and potassium, interaction in Purkinje fibers (dog), 717
 - cell membrane Na^+K^+ -ATPase enzyme system as pharmacological receptor, 2
- Dipyridamole**
- in study of coronary and collateral flow during circumflex occlusion (dog), 654
- Disulfides**
- effects on contractile response to prostaglandins (dog and rabbit), 66
- 5,5'-Dithiobisnitrobenzoic acid**
- effects on contractile response to prostaglandins (dog and rabbit), 66
- Dithiothreitol**
- effects on contractile responses to prostaglandins (dog and rabbit), 66
- Diuresis**
- mechanism, in head-out water immersion, 619
- DMO method**
- for intracellular pH (letter to editor), 141
- DNA** (see Deoxyribonucleic acid)
- Dopamine**
- receptors, 461
- Tracer-dilution method, double**
- in determination of myocardial tissue recruitment (dog), 276
- Dynamic geometry**
- left ventricle (dog), 304

E

- Ectopic foci**
- epicardial ST-T wave potentials (dog), 475
- Eicosatetraynoic acid**
- effects
 - on renin release from renal cortex (rabbit), 868
 - on stimulation of cardiac prostaglandin production by blood plasma (rabbit), 231
 - in study of vascular smooth muscle prostaglandin receptors (dog and rabbit), 66
- Elasticity**
- chordae tendineae, 580
 - ventricular pressure-volume curve and (dog), 772
- Elastin sheath**
- removal, effect on elasticity of chordae tendineae, 580
- Electrical activity**
- sinus node pacemaker cells (dog), 76
- Electron microscopy**
- hemodynamically induced fibromuscular lesions in renal artery (dog), 809
 - scanning, chordae tendineae, morphology, 580
- Electrotonic potentials** (see Potentials)
- Endothelium**
- hemodynamically induced fibromuscular lesions of renal artery (dog), 809
- Enzymes**
- activity
 - in intact sarcolemmal vesicles (dog), 586
 - of genetically hypertensive rats, 133
 - lysosomal, hormonal and nutritional substrate control (fetal mouse), 441
 - mitochondrial, effects of iron deficiency (rat), 744
- Epicardium**
- ST-T wave potentials, origin (dog), 475
- Epinephrine**
- adrenergic responses, 461
 - during paroxysmal neurogenic hypertension in quadriplegic man, 204
 - in study of effect of perfusion pressure on renal sodium trans-

- port (rat), 689
- in study of renin release by rat kidney slices in vitro, 200
- Ethacrynic acid**
 - effects on contractile response to prostaglandins (dog and rabbit), 66
- N-Ethylmaleimide**
 - in study of cardiac myosin (rabbit), 319
- Excitability**
 - atrial muscle, role of nonuniform recovery in the occurrence of unidirectional block (rabbit), 168
- Excitation**
 - postexcitatory depression, baroreceptor, electrogenic sodium pump and (rat), 497
- Excitation-contraction coupling**
 - in double sucrose gap voltage clamp technique (frog), 106
 - in myofibrillar calcium control (dog and rabbit), 8
- Exercise conditioning**
 - effect on myocardial contractile state (cat), 425
- Extensibility**
 - chordae tendineae, 580

F

- Facial vein**
 - neurogenic vasodilation mediated by β -adrenergic receptors (rabbit), 854
- Fatty acids, free**
 - effects on cardiac lysosomal enzyme activities (fetal mouse), 441
 - in myocardial ischemia (rabbit and dog), 24
 - transport across capillary endothelium, 149
- Fibrillation**
 - coronary artery compression during (dog), 53
 - ventricular, effect of site of myocardial infarction induced by coronary occlusion (cat), 840
- Fibromuscular lesions**
 - renal artery, hemodynamically induced (dog), 809
- Fibrosis**
 - myocardial, in cardiac hypertrophy induced by pressure overload (cat and rabbit), 238
- Fluorescein microcinematography**
 - in study of cerebral microcirculation (deer mouse), 453
- Fluorescence histochemistry**
 - basilar artery vasoconstriction (rabbit), 120
 - facial vein neurogenic dilation (rabbit), 854
 - hydroxydopamine effects on adrenergic transmission and nerve terminal morphology in pulmonary vascular bed (dog), 191
- Force-frequency relationship**
 - as descriptor of inotropic state of left ventricular myocardium (dog), 832
- Frank-Starling relation**
 - in study of heart size, 299
- Frequency-pressure curves**
 - aortic baroreceptor fibers (rat), 488
- Furosemide**
 - in study of indomethacin effects on plasma renin activity, in man, 447

G

- Ganglionectomy**
 - thoracic, effects on ventricular anodal strength-interval curves (dog), 429
- Gate hypothesis**
 - in refractoriness within ventricular conduction system (dog), 254
- Gestation**
 - changes in pulmonary vascular responses in fetal lambs in utero, 536
- Glucagon**
 - effects on lysosomal enzyme activity (fetal mouse), 441
- Glucocorticoids**
 - in ischemic myocardial tissue (cat), 640
- Glucosheptonate**

- $^{99m}\text{Tc}(\text{Sn})$ -labeled, uptake in injured myocardium (fetal mouse), 860
- Glucose**
 - ^{14}C -labeled, in myocardial ischemia (rabbit and dog), 24
 - effects on cardiac lysosomal enzyme activities (fetal mouse), 441
- Glycerol**
 - transport across capillary endothelium (rat), 149
- Glycogen phosphorylase**
 - activity in papillary muscle, regulation by cyclic AMP and calcium (guinea pig), 388
- Glycosaminoglycans**
 - $^{35}\text{SO}_4$ incorporation, as index of coronary artery wall stress (dog), 828
- Glycoside**
 - cardiovascular response, role of arterial baroreceptors (letter to editor), 455
- Gracilis muscle**
 - bioassay for vasoactive agents after acute renal artery constriction (dog), 517
- Growth hormone**
 - effects on lysosomal enzyme activity (fetal mouse), 441
- Guanethidine sulfate**
 - basilar artery contractile response (rabbit), 120

H

- H₂-receptors (see Receptors)**
- Heart**
 - congenital anomalies, cardiac hypertrophy and (cat and rabbit), 238
 - hypertrophied (see Hypertrophy)
 - loading (see Loading)
 - unloading therapy, 127
 - membranes, in infective cardiomyopathy (rabbit), 82
- Heart failure, congestive**
 - transcapillary escape rate of albumin and right atrial pressure in, 358
 - ventricular unloading, pharmacological mechanisms, 127
- Heart rate**
 - baroreflex responses to venous infusion (rabbit), 766
 - effect of site of myocardial infarction induced by coronary occlusion (cat), 840
- Heart size**
 - and muscular characteristics, relationship, 297
 - and ventricular function, relationship, 297
 - circumferential growth, 302
 - collateral resistance and (dog), 797
 - Frank-Starling relation, 299
 - mass to volume ratio, 301
 - muscle growth, 297
 - pressure overload, 302
 - review, 297
 - volume overload, 301
 - wall thickness, 299
- Heart sound**
 - second, theory and mechanism of origin, 874
- Hemodynamics**
 - of fibromuscular lesions in renal artery (dog), 809
 - in renal hypertension (rabbit), 633
- Hexamethonium**
 - effects on reflex vascular capacity (dog), 705
- Hindlimb**
 - Collateral circulation, effect of thrombotic occlusion (cat), 736
- Hindpaw**
 - capillary, interstitial, and lymphatic forces, interaction (dog), 245
- His bundle**
 - 1, 2, 3, 4 phenomenon (dog), 223
- Histamine**
 - effects on facial vein neurogenic dilation (rabbit), 854
 - inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566
- Hormonal control**

- of cardiac lysosomal enzyme activities (fetal mouse), 441
 - Hot film anemometer**
 - in measurement of disordered aortic blood flows (dog), 112
 - Hydergine**
 - effect on baroreceptor pressor response (cat), 724
 - β -Hydroxybutyrate**
 - effects on cardiac lysosomal enzyme activities (fetal mouse), 441
 - Hydroxydopamine**
 - effect on adrenergic transmission and nerve terminal morphology in pulmonary vascular bed (dog), 191
 - effect on myocardial contractile function and myofibrillar ATPase activity (rat), 683
 - Hypercapnia**
 - effect on coronary vascular resistance (dog), 558
 - Hypertension**
 - acute, effects on cerebral circulation (cat), 33
 - angiotensin-induced
 - aldosterone plasma levels in (dog), 788
 - baroreceptor influence on arterial pressure changes (dog), 779
 - effect of sodium intake, 788
 - essential
 - β -adrenergic blockade, renin release in, 532
 - low renin and normal renin, adrenergic reactivity (letter to editor), 289
 - genetic
 - calcium accumulation (rat), 133
 - enzymatic activities (rat), 133
 - one-kidney, immunization (rabbit), 396
 - paroxysmal neurogenic, in quadriplegic man, effect on plasma catecholamines, 204
 - renal
 - autoregulation theory in (rabbit), 633
 - cardiac output and total peripheral resistance during (rabbit), 633
 - renin-aldosterone axis, delayed suppression following saline infusion, 711
 - renovascular, cerebral blood flow autoregulation (baboon), 555
 - spontaneous
 - baroreceptor discharge (rat), 488
 - cell permeability in (rat), 433
 - electrogenic sodium pump, and baroreceptor function (rat), 497
 - low renal papillary plasma flow (Dahl and Kyoto rats), 337
 - potassium distribution in (rat), 433
 - proteins in (rat), 433
 - sodium transport in (rat), 433
 - ventricular, phasic right coronary blood flow and (conscious dog), 760
 - Hyperthermic stress**
 - effects on myocardial function during coronary ischemia (swine), 647
 - Hypertrophy**
 - cardiac
 - induced by sudden pressure overload (cat and rabbit), 238
 - myocardial necrosis, fibrosis, and DNA synthesis in (cat and rabbit), 238
 - inappropriate, 302
 - right ventricular, phasic right coronary blood flow and (conscious dog), 760
 - ventricular pressure-volume curve and (dog), 772
 - Hypervolemia**
 - collecting duct function in (rat), 282
 - experimental maneuvers for induction of, 619
 - Hypocapnia**
 - effect on coronary vascular resistance (dog), 558
 - Hypoxemia**
 - gestational changes in pulmonary vascular responses in fetal lambs in utero, 536
 - Hypoxia**
 - effect on regional distribution of cardiac output (dog), 314
 - papillary muscle tension prolongation in, effects of sodium nitroprusside and nitroglycerin (cat), 596
- I**
- Imaging agents**
 - uptake, in injured myocardium (fetal mouse), 860
 - Immunization**
 - in one-kidney hypertension (rabbit), 396
 - Indicator-dilution studies**
 - coronary capillary transit time heterogeneity (dog), 541
 - myocardial tissue recruitment (dog), 276
 - Indolylacetic acid**
 - ^{14}C -labeled, activity in facial vein (rabbit), 854
 - Indomethacin**
 - effects
 - after renal artery constriction (dog), 517
 - on aldosterone in man, 447
 - on mesenteric artery vasoconstrictor response to adrenergic stimuli (rabbit and rat), 163
 - on prostaglandin synthetase activity, in man, 447
 - on renin-aldosterone responses to prostaglandin A_1 , 574
 - on renin release from renal cortex (rabbit), 868
 - on sodium excretion in man, 447
 - on stimulation of cardiac prostaglandin production by blood plasma (rabbit), 231
 - in study of vascular smooth muscle prostaglandin receptors (dog and rabbit), 66
 - suppression of plasma renin activity in man, 447
 - Infarction, myocardial**
 - imaging agents, uptake of (fetal mouse), 860
 - site, as determinant of cardiovascular changes induced by coronary occlusion (cat), 840
 - ventricular pacemakers in, 883
 - Inotropy**
 - of left ventricular myocardium, force-frequency relationship as a descriptor (dog), 832
 - positive
 - and Na^+ , K^+ -ATPase inhibition, correlation, 2
 - effect of angiotensin II on cardiac muscle (mammals and chick embryo), 178
 - Insulin**
 - deficiency, effects on lysosomal enzyme activity (fetal mouse), 441
 - Internal elastic lamina**
 - in hemodynamically induced fibromuscular lesions of renal artery (dog), 809
 - Interstitial fluid**
 - forces, interaction with capillary and lymphatic forces (dog), 245
 - Intestine, small**
 - capillary and tissue forces, interaction (cat), 348
 - Iodoantipyrine**
 - ^{125}I -labeled, in determination of intrarenal blood flow (rat), 362
 - Ionophores**
 - activity in genetically hypertensive rat, 133
 - Iron**
 - deficiency, effects on respiratory function and cytochrome content of cardiac mitochondria (rat), 744
 - Ischemia**
 - collateral resistance in (dog), 797
 - coronary, and hyperthermic stress, effects on myocardial function (swine), 647
 - myocardial
 - dynamic alterations in ventricular contractility and relaxation with dissociation of speed and force (dog), 602
 - external detection with ^{11}C substrates (rabbit and dog), 24
 - glucocorticoid uptake (cat), 640
 - perfusion impairment during (dog), 269
 - pyruvate and tromethamine treatment (swine), 378
 - redistribution of collateral blood flow (dog), 214
 - subendocardial, coronary compression during (dog), 53

Isoproterenol

- adrenergic responses, 461
- effects on facial vein neurogenic dilation (rabbit), 854
- in study of
 - atrial action potentials (chick embryo), 99
 - myocardial force-frequency relationship (dog), 832
 - papillary muscle contractility and glycogen phosphorylase activity (guinea pig), 388
 - renin release by rat kidney slices in vitro, 200

Isotopes (see Radionuclide studies)

J**Juxtaglomerular cells**

- calcium effects on renin secretion (dog), 847

K**Ketones**

- effects on lysosomal enzyme activity (fetal mouse), 441

Kidney

- acute renal failure in mercury intoxication, effect of dietary NaCl (rat), 506
- blood flow (see Blood flow)
- collecting duct function, in hypervolemia (rat), 282
- effects of head-out water immersion, 619
- failure, aldosterone and blood pressure responses to angiotensin II, effect of sodium deprivation, 183
- hypertension (see Hypertension)
- lesions, in mercury intoxication, histology (rat), 506
- microsphere distribution, effect of steric restriction (dog), 608
- renin activity (see Renin)
- sodium transport, effect of perfusion pressure increase (rat), 689

L**Lactate**

- production in myocardial ischemia (rabbit and dog), 24

Lipids

- transport across capillary endothelium (rat), 149

Lipoprotein

- effects on aortic smooth muscle cells (swine), 415
- very low density, transport across capillary endothelium (rat), 149

Lipoprotein lipase

- activity
 - in chylomicron transport, 149
 - sites of, 149

Lithium

- effects on aortic baroreceptors (rat), 497

Loading

- physiological, of isolated cardiac muscle (mammal), 42
- volume, baroreflex responses to venous infusion (rabbit), 766
- volume overload, effect on heart size, 301

Lungs

- single-pass extraction and permeability of sodium (dog), 523

Lymphatic forces

- interaction with capillary and interstitial forces (dog hindpaw), 245
- intestinal (cat), 348

Lysosomal enzymes

- cardiac, hormonal and nutritional substrate control (fetal mouse), 441

M**Macula densa**

- calcium effects on renin secretion (dog), 847

Magnesium

- in study of intact cardiac sarcolemmal vesicles (dog), 586
- in study of positive inotropic effect of angiotensin II on cardiac muscle (rabbit, guinea pig, chick embryo), 178
- myofibrillar calcium control (dog and rabbit), 8

Magnesium-ATPase

- in infective cardiomyopathy (rabbit), 82

Mammary gland

- capillary cytochemical reaction, 149
- chylomicrons (rat), 149

Manganese ions

- effect on action potential changes in atrioventricular node (rabbit), 326

Mannitol

- hyperosmotic, in study of perfusion impairment during myocardial ischemia (dog), 269

Mercury intoxication

- renal blood flow in, effect of dietary NaCl (rat), 506
- renal lesions, histology (rat), 506

Mesenteric artery

- vasoconstrictor response to adrenergic stimuli (rabbit and rat), 163

Methoxamine

- effects on pentobarbital-induced tachycardia (dog), 512
- in study of role of arterial baroreceptors in regulation of arterial pressure (dog), 666

Methylhistamine

- in study of histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566

Methylprednisolone

- ³H-labeled, uptake in myocardial ischemia (cat), 640

Methylxanthines

- in study of adenosine receptor (dog), 93

Metiamide

- in study of histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566

Microsomes

- in infective cardiomyopathy (rabbit), 82

Microspheres (see Radionuclide studies)**Microtubules**

- role in renin release by rat kidney slices in vitro, 200

Mitochondria, cardiac

- abnormalities, in infective cardiomyopathy (rabbit), 82
- respiratory function and cytochrome content, effects of iron deficiency (rat), 744

Models

- aortic arch-aortic nerve preparation for study of baroreceptor discharge (rat), 488, 497
- bioassay preparation in vivo for circulating vasoactive agents after renal artery constriction (dog), 517
- cardiovascular system, for investigation of second heart sound, 874
- computer, origin of epicardial ST-T wave potentials (dog), 475
- coronary capillary transit time (dog), 541
- for studying interstitial and lymphatic forces (dog hindpaw), 245
- hemodynamic induction of fibromuscular lesions in renal artery (dog), 809
- intestinal capillary and tissue forces (cat), 348
- isolated, isovolumic canine heart preparation, 602
- left anterior coronary artery bypass system (dog), 214
- mathematical, of microsphere distribution in kidney (dog), 608
- nonfiltering kidney, site of calcium action on renin secretion (dog), 847
- ouabain distribution (dog), 407
- papillary muscle tension prolongation studies (cat), 596
- SI, in study of ST-T wave potentials (dog), 475

Monoamine oxidase

- activity in facial vein (rabbit), 854

Muscle

- atrial
 - excitability, role of nonuniform recovery in the occurrence of unidirectional block (rabbit), 168
 - extracellular potassium activity, effect of decreased pH (rabbit), 678
 - reentry (rabbit), 168
 - tension-voltage determinations with double sucrose gap voltage clamp technique (frog), 106
- cardiac

- and heart size, relationship, 297
contractile force, myocardial, effect of pattern of cardiac sympathetic activity (dog), 341
contractile function, myocardial, and adenosine triphosphatase activity in sympathectomized rats, 683
contractile state, myocardial, effect of exercise conditioning (cat), 425
contractility and relaxation, ventricular, alterations with dissociation of speed and force, in myocardial ischemia (dog), 602
contraction, effect on collateral resistance (dog), 797
force-frequency relationship as descriptor of inotropic state of left ventricular myocardium (dog), 832
function, basic mechanisms, 297
isolated, physiological loading (mammalian), 42
Na⁺.K⁺-ATPase, inotropic effects, 2
positive inotropic effect of angiotensin II (mammals and chick embryo), 178
chordae tendineae, morphology and relation to extensibility curves, 580
gracilis, bioassay for circulating vasoactive agents after renal artery constriction (dog), 517
papillary
 contractility and glycogen phosphorylase activity, regulation by cyclic AMP and calcium (guinea pig), 388
 oxygen consumption during tetanus (cat), 695
 physiological loading (cat), 42
 positive inotropic effect of angiotensin II (rabbit), 178
 rhythmic automatic depolarization (guinea pig), 751
 tension prolongation after hypoxia, effects of sodium nitroprusside and nitroglycerin (cat), 596
vascular smooth
 adrenergic neurotransmission, inhibition by histamine and mediation by H₂-receptors (dog), 566
 contractile response to prostaglandins (dog and rabbit), 66
 contractions, histamine effects (dog), 566
 prostaglandin receptor in (dog and rabbit), 66
Myocardium (see also Muscle, cardiac)
 blood flow (see Blood flow)
 cells, sodium uptake and contraction frequency, effect of quinidine and temperature (rat), 730
 collateral resistance, in coronary occlusion (dog), 371
 contractility (see Muscle, cardiac)
 energetic active state, oxygen consumption during tetanus of papillary muscle (cat), 695
 fibers, ventricular, decay of potentiated state, influence of agents acting on transmembrane Ca²⁺ flux (sheep and calf), 396
 function, effects of hyperthermic stress during coronary ischemia (swine), 647
 infarction (see Infarction)
 injured, uptake of infarct-imaging agents in (fetal mouse), 860
 ischemia (see Ischemia)
 left ventricular force-frequency relationship as descriptor of inotropic state (dog), 832
 myofibrillar ATPase activity in sympathectomized rats, 683
 necrosis, fibrosis, and DNA synthesis in cardiac hypertrophy induced by sudden pressure overload (cat and rabbit), 238
 necrotic, redistribution of collateral blood flow (dog), 214
 tissue recruitment, double tracer dilution method (dog), 276
 ventricular fibers, rhythmic automatic depolarization in (guinea pig), 751
Myocytes
 coronary, adenosine receptor (dog), 93
Myofibrils
 calcium control by Mg²⁺ (dog and rabbit), 8
 heart, in infective cardiomyopathy (rabbit), 82
 myocardial, ATPase activity in sympathectomized rats, 683
Myosin
 ATPase, regulation of (rabbit), 319
 cardiac, from normal and thyrotoxic rabbits, enzymatic properties, 319
 effects on myofibrillar calcium control (dog and rabbit), 8
- N**
- NADH cytochrome c reductase**
 mitochondrial, effects of iron deficiency (rat), 744
NADH ferricyanide oxidoreductase
 mitochondrial, effects of iron deficiency (rat), 744
Natriuresis
 mechanism, in head-out water immersion, 619
Necrosis, myocardial
 in cardiac hypertrophy induced by pressure overload (cat and rabbit), 238
 redistribution of collateral blood flow (dog), 214
Negative-pressure breathing
 effect of head-out water immersion, 619
 in induction of central hypervolemia, 619
Nerves
 stimulation, transmural
 basilar artery contractile response (rabbit), 120
 dilation induced by, mediation by β -adrenergic receptors (rabbit), 854
Nickel ions
 influence on Ca²⁺ transmembrane flux in myocardial fibers (sheep and calf), 396
Nitroglycerin
 cardiac unloading therapy, 127
 effects on tension prolongation of papillary muscle after hypoxia (cat), 596
 in study of role of arterial baroreceptors in regulation of arterial pressure (dog), 666
p-Nitrophenylphosphate
 activity in intact sarcolemmal vesicles (dog), 586
Nitroprusside
 cardiac unloading therapy, 127
 effects on tension prolongation of papillary muscle after hypoxia (cat), 596
No-reflow phenomenon
 in prolonged, low flow myocardial ischemia (dog), 269
Noradrenergic blocking agents
 effect on baroreceptor pressor response (cat), 724
Norepinephrine
 adrenergic responses, 461
 basilar artery contractile response (rabbit), 120
 cardiac overflow, effect of cardiac sympathetic activity (dog), 341
 during paroxysmal neurogenic hypertension in quadriplegic man, 204
 excretion, in low renin and normal renin essential hypertension (letter to editor), 289
 facial vein dilation induced by, mediation by β -adrenergic receptors (rabbit), 854
 in study of
 histamine inhibition of adrenergic neurotransmission (dog), 566
 hydroxydopamine effects on adrenergic transmission and nerve terminal morphology in pulmonary vascular bed (dog), 191
 vascular smooth muscle prostaglandin receptors (dog and rabbit), 66
 mesenteric artery vasoconstrictor response, effects of prostaglandin, indomethacin, and arachidonic acid (rabbit and rat), 163
 release, potassium-induced, inhibition by acetylcholine (dog saphenous vein), 263
Normetanephrine
 ¹⁴C-labeled, activity in facial vein (rabbit), 854
Normocapnia
 effect on coronary vascular resistance (dog), 558
5'-Nucleotidase
 activity
 in genetically hypertensive rat, 133
 in study of glucocorticoid uptake in myocardial tissue (cat), 640
Nucleotide triphosphatase
 myosin, activity (rabbit), 319

Nutritional substrates

- control of cardiac lysosomal enzyme activities (fetal mouse), 441

O**Occlusion**

- aortic, effect on collateral vessel development (cat), 736
- carotid, in study of effect of perfusion pressure on renal sodium transport (rat), 689
- circumflex artery, effect on coronary and collateral flows (dog), 654
- coronary (*see* Coronary artery)
- thrombotic, inhibition of collateral vessel development (cat), 736

Octanoate

- ¹⁴C-labeled, in myocardial ischemia (rabbit and dog), 24

Octanoic acid

- effects on lysosomal enzyme activity (fetal mouse), 441

Oligosaccharides

- in study of adenosine receptor (dog), 93

Ouabain

- and potassium, interaction in Purkinje fibers (dog), 717
- effect on electrogenic sodium pump and baroreceptor function (rat), 497
- in study of intact cardiac sarcolemmal vesicles (dog), 586
- pharmacology, age-related changes (dog), 407

Oxygen

- consumption, during tetanus of papillary muscle (cat), 695

P**Pacemakers**

- Purkinje fibers, effect of electrotonic potentials (dog), 801
- sinus node, spontaneous action potentials (dog), 76
- ventricular
 - hierarchy of, 883
 - localization, 883

Palmitate

- ¹⁴C-labeled, in myocardial ischemia (rabbit and dog), 24

Papillary muscle (*see* Muscle, papillary)**Parasystole**

- effect of electrotonic potentials on pacemaker activity in Purkinje fibers (dog), 801

Partition chamber

- technique, for automaticity in depolarized myocardium (guinea pig), 751

Peptide substrates

- tonin-catalyzed hydrolysis (rat), 629

Perfusion

- impairment, during myocardial ischemia (dog), 269
- pressure (*see* Pressure)

Peripheral resistance (*see* Resistance)**Permeability**

- capillary, of sodium in normal lung (dog), 523
- cell, in hypertension (rat), 433

pH

- decreased, effect on extracellular potassium activity in atrial muscle (rabbit), 678
- intracellular, DMO method (letter to editor), 141

Phenoxybenzamine

- adrenergic responses, 461
- basilar artery contractile response (rabbit), 120
- effects on facial vein neurogenic dilation (rabbit), 854
- in study of hydroxydopamine effects on adrenergic transmission and nerve terminal morphology in pulmonary vascular bed (dog), 191
- in study of renin release by rat kidney slices in vitro, 200

Phentolamine

- cardiac unloading therapy, 127
- effect on baroreceptor pressor response (cat), 724

Phentolamine methanesulfonate

- basilar artery contractile response (rabbit), 120

Phospholipids

- transport across capillary endothelium (rat), 149

Phosphorylase

- activity in papillary muscle (guinea pig), 388

Pial arterioles

- caliber of, in acute hypertension (cat), 33

Plasma

- effect on regulation of coronary flow (rabbit), 231
- renal papillary flow, in spontaneous hypertension (Dahl and Kyoto rats), 337
- stimulation of cardiac prostaglandin production (rabbit), 231
- renin activity (*see* Renin)
- transit time, in cerebral microcirculation (deer mouse), 452

Plasma membrane

- calcium and enzymatic activity, in genetically hypertensive rat, 133

Positive-pressure breathing

- in induction of central hypervolemia, 619
- in water immersion, 619

Potassium (*see also* Sodium-potassium-ATPase)

- and digitalis, interaction in Purkinje fibers (dog), 711
- distribution, in hypertension (rat), 433
- effects
 - on automaticity in depolarized myocardium (guinea pig), 751
 - on Purkinje fiber potentials (dog), 466
- extracellular, activity in atrial muscle, effect of decreased pH (rabbit), 678
- in study of histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566
- in study of vascular smooth muscle prostaglandin receptors (dog and rabbit), 66
- plasma concentration, effects of angiotensin (dog), 788

Potassium-free solutions

- effects on aortic baroreceptors (rat), 497

Potassium phosphatase

- ouabain-sensitive, activity in genetically hypertensive rat, 133

Potentials

- action
 - changes under varied extracellular sodium and calcium concentrations indicating existence of two inward currents in atrioventricular junction (rabbit), 326
 - in double sucrose gap voltage clamp technique (frog), 106
 - nodal, ionic dependence of (rabbit), 326
 - spontaneous, in sinus node (dog), 76
- atrial
 - effects of extracellular potassium (rabbit), 678
 - ontogenetic changes in dependence on calcium, strontium, and barium (chick embryo), 99
- decay of potentiated state in ventricular myocardial fibers, influence of agents acting on transmembrane Ca²⁺ flux (sheep and calf), 396
- electrotonic, effect on pacemaker activity in Purkinje fibers in relation to parasystole (dog), 801
- epicardial ST-T wave, origin (dog), 475
- membrane
 - in depolarized myocardium (guinea pig), 751
 - Purkinje cells, digitalis-potassium interaction (dog), 711
- Purkinje fibers
 - resting, two levels, effect of sodium-free solution (dog), 466
 - slow response (dog), 466

Practolol

- adrenergic responses, 461

Pressure

- aortic, phasic right coronary blood flow and (conscious dog), 760
- arterial
 - and angiotensin II, dose-response relationship (dog), 788
 - baroreceptor influence, in angiotensin-induced hypertension (dog), 779
 - regulation, role of arterial baroreceptors (dog), 666
- atrial, in congestive heart failure, 358
- baroreflex responses to venous infusion (rabbit), 766
- carbon dioxide, alterations, effect on coronary vascular resistance (dog), 558
- development, in myocardial ischemia (dog), 602

- effect of site of myocardial infarction induced by coronary occlusion (cat), 840
end-diastolic, effect on ventricular pressure-volume curve indices (dog), 772
interstitial fluid (dog hindpaw), 245
intramyocardial, collateral resistance and (dog), 797
overload, effect on heart size, 302
perfusion
 coronary, in study of ventricular contractility and contraction in myocardial ischemia (dog), 602
 renal, effect on renal sodium transport (rat), 689
response to angiotensin II infusion in anephric man, effect of sodium deprivation, 181
transcapillary (dog hindpaw), 245
venous, vascular and hemodynamic responses (dog hindpaw), 245
ventricular, phasic right coronary blood flow and (dog), 760
- Pressure-flow relationships**
in study of cardiac prostaglandin production (rabbit), 231
- Pressure pulse**
aortic, determination of stroke volume from (dog), 15
- Pressure-volume curve**
aortic baroreceptor fibers (rat), 488
ventricular, indices, change with end-diastolic pressure (dog), 772
- Propranolol**
adrenergic responses, 461
effects
 on facial vein neurogenic dilation (rabbit), 854
 on plasma renin activity in essential hypertension, 532
in study of positive inotropic effect of angiotensin II on cardiac muscle (rabbit, guinea pig, chick embryo), 178
in study of renin release by rat kidney slices in vitro, 200
- Proteins**
in hypertension (rat), 433
- Prostaglandin**
cardiac production, stimulation by blood plasma and relationship to coronary flow (rabbit), 231
effects
 on renin release from renal cortex (rabbit), 868
 on vascular smooth muscle contraction, 66
receptor, in vascular smooth muscle (dog and rabbit), 66
release, after renal artery constriction (dog), 517
urinary levels, effect of indomethacin in man, 447
- Prostaglandin A₁**
renin-aldosterone responses, 574
- Prostaglandin E₁**
effects on mesenteric artery vasoconstrictor response to adrenergic stimuli (rabbit and rat), 163
- Prostaglandin E₂**
effects on mesenteric artery vasoconstrictor response to adrenergic stimuli (rabbit and rat), 163
- Prostaglandin endoperoxides**
stimulation of renin release from renal cortex (rabbit), 868
- Prostaglandin synthetase**
effect of indomethacin, in man, 447
- Pulmonary artery**
banding, in production of myocardial hypertrophy (cat and rabbit), 238
- Pulmonary vascular bed**
adrenergic transmission and nerve terminal morphology, effects of 5- and 6-hydroxydopamine (dog), 191
- Pulmonary vessels**
gestational changes, in fetal lambs in utero, 536
- Pulmonic stenosis**
phasic right coronary blood flow and (conscious dog), 760
- Purine**
analogues, in study of adenosine receptor (dog), 93
- Purkinje fibers**
digitalis-potassium interaction (dog), 711
pacemaker activity, effect of electrotonic potentials (dog), 801
potentials (*see* Potentials)
refractoriness, gate hypothesis (dog), 254
- Pyridamine**
in study of histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566
- Pyrophosphate**
^{99m}Tc(Sn)-labeled, uptake in injured myocardium (fetal mouse), 860
- Pyruvate**
and tromethamine, in treatment of myocardial ischemia (swine), 378
- Q**
- Quadriplegia**
with paroxysmal neurogenic hypertension, effect on plasma catecholamines, 204
- Quinidine**
and temperature, effect on myocardial cell sodium uptake and contraction frequency (rat), 730
- R**
- Radioimmunoassay**
angiotensin II and its immunoreactive peptides in arterial and venous blood, 671
- Radionuclide studies**
albumin, transcapillary escape rate, in congestive heart failure, 358
¹¹C-substrates, in detection of myocardial ischemia (rabbit and dog), 24
capillary permeability of sodium in lungs (dog), 523
cardiac prostaglandin production (rabbit), 231
cerebral blood flow autoregulation in renovascular hypertension (baboon), 555
collateral resistance in coronary occlusion (dog), 371
coronary capillary transit time heterogeneity (dog), 541
facial vein neurogenic dilation (rabbit), 854
glucocorticoid uptake in myocardial ischemia (cat), 640
histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566
hypoxia, effect on regional distribution of cardiac output (dog), 314
infarct-imaging agents, uptake (fetal mouse), 860
intrarenal distribution of blood flow (rat), 362
microspheres, intracortical distribution, effect of steric restriction (dog), 608
myocardial tissue recruitment, double tracer dilution method (dog), 276
redistribution of collateral blood flow in myocardium after coronary occlusion (dog), 214
renal blood flow, effect of dietary NaCl and mercury intoxication (rat), 506
³⁵SO₄ incorporation into glycosaminoglycans, as index of coronary artery wall stress (dog), 828
- Receptors**
adenosine, on surface of coronary myocytes (dog), 93
adrenergic
 classification, 461
 coronary, review, 461
 α- and β-adrenergic, role in renin release by rat kidney slices in vitro, 200
 β-adrenergic, mediation of neurogenic vasodilation of facial vein (rabbit), 854
adrenotropic, classification, 462
baroreceptor reflex, arterial, role, in pentobarbital-induced tachycardia (dog), 512
baroreceptors
 denervation, effect on cardiovascular responses to venous infusion (rabbit), 766
 effect on arterial pressure in angiotensin-induced hypertension (dog), 779
 pressor response, effect of intracerebroventricular injection of noradrenergic blocking agents (cat), 724
baroreceptors, aortic
 discharge, in normotensive and spontaneously hypertensive rats, 488

- function, effect of electrogenic sodium pump (rat), 497
postexcitatory depression (rat), 497
- baroreceptors, arterial**
regulation of arterial pressure (dogs), 666
role in mediating cardiovascular response to a cardiac glycoside (letter to editor), 455
- baroreceptors, sino-aortic, in angiotensin-induced hypertension (dog), 779**
- baroreflex cardiovascular responses, reduction due to venous infusion (rabbit), 766**
- digitalis, 2**
- dopamine, 461**
- H₂-, mediation of adrenergic neurotransmission in vascular smooth muscle (dog), 566**
- prostaglandin (dog and rabbit), 66**
- Recruitment**
myocardial tissue, double tracer dilution study (dog), 276
- Red cells**
velocity, in cerebral microcirculation (deer mouse), 452
- Reentry**
in atrial muscle (rabbit), 168
- Reflex control**
of vascular capacity (dog), 705
- Refractoriness**
in ventricular conduction system, gate hypothesis (dog), 254
- Refractory period**
atrial muscle, in tachycardia (rabbit), 168
- Renal artery**
constriction, circulating vasoactive agents (dog), 517
contractile response to prostaglandins (rabbit), 66
hemodynamically induced fibromuscular lesions (dog), 809
- Renal blood flow (see Blood flow)**
- Renal papilla**
low plasma flow, in spontaneous hypertension (rat), 337
- Renin**
and aldosterone, responses to prostaglandin A₁, 574
and antireninin, in one-kidney hypertension (rabbit), 396
concentration, after renal artery constriction (dog), 517
plasma, activity (PRA)
after β -adrenergic blockade in essential hypertension, 532
effects of angiotensin (dog), 788
effects of water immersion, 619
in low renin and normal renin essential hypertension, adrenergic reactivity (letter to editor), 289
propranolol effects, 532
suppression by indomethacin in man, 447
release
by kidney slices in vitro, role of sodium and adrenergic receptors and effect of vincristine (rat), 200
from renal cortex, stimulation by arachidonic acid and prostaglandin endoperoxides (rabbit), 868
secretion, intrarenal site of action of calcium (dog), 847
- Renin-angiotensin-aldosterone axis**
delayed suppression following saline infusion in human hypertension, 711
- Repolarization**
ventricular, epicardial potentials in measurement of (dog), 475
- Reserpine**
basilar artery contractile response (rabbit), 120
- Resistance**
collateral
effect of cardiac contraction (dog), 797
in systole (dog), 797
coronary vascular
effect of prolonged low flow in myocardial ischemia (dog), 269
response to local alterations in coronary arterial Pco₂ (dog), 558
peripheral, effect of site of myocardial infarction induced by coronary occlusion (cat), 840
total peripheral, during renal hypertension (rabbit), 633
- Respiration**
mitochondrial, effects of iron deficiency (rat), 744
- Resting potentials (see Potentials)**
- S**
- S₁S₂S₃ stimulation**
in quantification of atrioventricular nodal concealed conduction, 659
- Saline**
infusion
and water immersion, comparison, as volume determinants of renal sodium and water handling, 619
effect on renin-aldosterone axis in human hypertension, 711
volume expansion, effects on renin-aldosterone responses to prostaglandin A₁, 574
- Salbutamol**
adrenergic responses, 461
- Salt deprivation**
effect on collecting duct function in hypervolemia (rat), 282
- Salt loading**
effect on collecting duct function in hypervolemia (rat), 282
- Saphenous vein**
acetylcholine inhibition of potassium-induced norepinephrine release (dog), 263
histamine inhibition of vascular smooth muscle (dog), 566
- Sarcolemma**
abnormalities in infective cardiomyopathy (rabbit), 82
intact vesicles, Na⁺K⁺-ATPase studies (dog), 586
- Semilunar valves**
second heart sound and, 874
- SI models**
origin of epicardial ST-T wave potentials (dog), 475
- Sino-aortic baroreceptors (see Receptors)**
- Sinus node**
action potentials, spontaneous (dog), 76
ultrastructure, 76
- Smooth muscle cells**
in hemodynamically induced fibromuscular lesions of renal artery (dog), 809
- ³⁵SO₄**
incorporation into glycosaminoglycans along coronary artery, as index of artery wall stress (dog), 828
- Sodium**
deprivation, effect on aldosterone and blood pressure response to angiotensin II infusion in anephric man, 181
effects
on angiotensin-aldosterone relationship (dog), 788
on angiotensin-arterial pressure relationship (dog), 788
excretion, effects of indomethacin in man, 447
extracellular concentration, effect on atrioventricular nodal action potentials (rabbit), 326
influence on Ca²⁺ transmembrane flux in ventricular myocardial fibers (sheep and calf), 396
intake, effect on renal papillary plasma flow in spontaneous hypertension (rat), 337
renal handling, in head-out water immersion, 619
renal transport, effect of perfusion pressure increase (rat), 689
role in renin release by rat kidney slices in vitro, 200
single-passage extraction and permeability, estimation in normal lung (dog), 523
transport, in hypertension (rat), 433
uptake, and contraction frequency of myocardial cells, effect of quinidine and temperature (rat), 730
- Sodium chloride**
dietary, effect on renal blood flow in normal and mercury-intoxicated rat, 506
- Sodium dodecyl sulfate**
in study of intact sarcolemmal vesicles (dog), 586
- Sodium-free solutions**
effect on Purkinje fiber potentials (dog), 466
- Sodium-potassium-ATPase**
antibodies, 2
cell membrane system, as pharmacological receptor for digitalis, 2
chemistry, 2
in infective cardiomyopathy (rabbit), 82
in intact vesicles of cardiac sarcolemma (dog), 586
inhibition, correlation with positive inotropy, 2

Sodium pump

electrogenic, effect on baroreceptor function in normotensive and spontaneously hypertensive rats, 497

Sonomicrometry (see Ultrasound)**ST-T segment**

wave potentials, epicardial, origin of (dog), 475

Stachyose

in study of adenosine receptor (dog), 93

Stellectomy

effects on ventricular anodal strength-interval curves (dog), 429

Stenosis

aortic, second heart sound in, 874
pulmonic, phasic right coronary blood flow and (dog), 760
thoracic aorta, measurement of distal disordered flow (dog), 112

Stiffness

ventricular pressure-volume curve and (dog), 772

Strain

ventricular pressure-volume curve and (dog), 772

Strength-interval curves

ventricular anodal, effects of sympathetic stimulation and ablation (dog), 429

Stress

hyperthermic, effects on myocardial function during coronary ischemia (swine), 647
ventricular pressure-volume curve and (dog), 772

Strontium

action potential dependency on (chick embryo), 99
in study of effect of dietary NaCl and mercury intoxication on renal blood flow (rat), 506

Submaxillary gland

tonin, substrate specificity (rat), 629

Succinic cytochrome c reductase

mitochondrial, effects of iron deficiency (rat), 744

Sucrose

¹⁴C-labeled
in study of coronary capillary transit time heterogeneity (dog), 541
in study of facial vein neurogenic dilation (rabbit), 854

Sucrose gap

double sucrose gap voltage clamp technique, in tension-voltage determinations on atrial muscle (frog), 106
in study of effect of electrotonic potentials on Purkinje fiber pacemaker activity (dog), 801

Sulphydryls

vascular smooth muscle, effect of prostaglandins (dog and rabbit), 66

Sympathectomy

effect on myocardial contractile function and myofibrillar ATPase activity (rat), 683

Sympathetic blockade

α - and β -, effect on pulmonary vascular responses in fetal lambs in utero, 536

Sympathetic nerves

activity in myocardial contractile force and norepinephrine overflow (dog), 341
adrenergic responses of coronary vessels, review, 461
during paroxysmal neurogenic hypertension in quadriplegic man, 204

role in myocardial contractile function and ATPase activity (rat), 683

stimulation

effect on histamine-depressed contractions in vascular smooth muscle (dog), 566
mesenteric artery vasoconstrictor response, effects of prostaglandin, indomethacin, and arachidonic acid (rabbit and rat), 163

stimulation and ablation, effects on ventricular anodal strength-interval curves (dog), 429

Sympathetic transmission

modulation of (rabbit and rat), 163

Systole

collateral resistance in (dog), 797

T**Tachycardia**

circus movement in atrial muscle as a mechanism of (rabbit), 168
mechanism, effects of sodium pentobarbital anesthesia (dog), 512

Temperature

and quinidine, effect on myocardial cell sodium uptake and contraction frequency (rat), 730

Tension

phasic, in double sucrose gap voltage clamp technique (frog), 106
prolongation, of papillary muscle after hypoxia, effects of sodium nitroprusside and nitroglycerin (cat), 596

Tension-voltage

determinations with double sucrose gap voltage clamp technique (frog), 106

Tetanus

papillary muscle, oxygen consumption during (cat), 695

Tetracycline

radioiodinated, uptake in injured myocardium (fetal mouse), 860
^{99m}Tc(Sn)-labeled, uptake in injured myocardium (fetal mouse), 860

Tetramethylammonium

effects on Purkinje fiber potentials (dog), 466
in study of atrial action potentials (chick embryo), 99

Tetrodotoxin

basilar artery contractile response (rabbit), 120
effects on atrial action potentials, ontogenetic changes (chick embryo), 99
effect on sodium uptake and contraction in myocardial cells (rat), 730
in study of acetylcholine inhibition of potassium-induced norepinephrine release (dog saphenous vein), 263
in study of positive inotropic effect of angiotensin II on cardiac muscle (mammals and chick embryo), 178

Theophylline

in study of adenosine receptor (dog), 93

Thrombotic occlusion

inhibition of collateral vessel development (cat), 736

Thyroxine

regulation of myosin ATPase, 319

Tibial artery

contractile response to prostaglandins (dog), 66

Tissue

forces, and capillary forces, intestinal, interaction (cat), 348
recruitment, myocardial, double tracer dilution study (dog), 276

Tonin

from submaxillary gland, substrate specificity (rat), 629

Trichloroacetic acid

in study of coronary artery wall stress (dog), 828

Triglycerides

transport across capillary endothelium (rat), 149

Tromethamine (Tris)

and pyruvate, in treatment of myocardial ischemia (swine), 378

Troponin

activity in myofibrillar calcium control (dog and rabbit), 8

Tryptamine

¹⁴C-labeled, activity in facial vein (rabbit), 854

Tyramine

effects on histamine inhibition of adrenergic neurotransmission in vascular smooth muscle (dog), 566
in study of myocardial contractile function and myofibrillar ATPase activity (rat), 683

Tyrod's solution

effects on Purkinje fiber potentials (dog), 466

U**Ultrasound studies**

hemodynamic changes in renal hypertension (rabbit), 633
three-dimensional dynamic geometry of left ventricle (dog), 304

Unloading
therapy, 127

V

Vagotomy
in study of effect of perfusion pressure on renal sodium transport (rat), 689

Vascular capacity
reflex reduction (dog), 705

Vascular resistance (see Resistance)

Vascular muscle (see Muscle)

Vasoactive agents
circulating, after renal artery constriction (dog), 517

Vasoc constriction
neurogenic sympathetic, of basilar artery (rabbit), 120
of mesenteric artery, effect of adrenergic stimuli (rabbit and rat), 163
renal, in essential hypertension, renin release in, 532

Vasodilation
neurogenic, of facial vein, mediation by β -adrenergic receptors (rabbit), 854

Vasodilators
effects on tension prolongation (cat), 596
ventricular compliance and (cat), 596

Vasomotor control
of coronary capillary transit time heterogeneity (dog), 541

Venous infusion
baroreflex responses (rabbit), 766

Ventricles
anodal strength-interval curves, effects of sympathetic stimulation and ablation (dog), 429
calcium accumulation in genetically hypertensive rat, 133
compliance
pressure-volume curve and (dog), 772
vasodilators and (cat), 596
conduction system (see Conduction)
contractility (see Muscle)
enzymatic activities in genetically hypertensive rat, 133
function
and heart size, relationship, 297
effect of sodium pentobarbital anesthesia (dog), 512
left, three-dimensional dynamic geometry (dog), 304
pressure, phasic right coronary blood flow and (dog), 760
pressure-volume curve indices, change with end-diastolic pressure (dog), 772
repolarization, epicardial potentials in measurement of (dog), 475
ultrastructure, in cardiomyopathy (rabbit), 82

unloading, in clinical congestive heart failure, pharmacological mechanisms, 127

Verapamil
effect on sodium uptake and contraction in myocardial cells (rat), 730

Vincristine
effect on renin release by rat kidney slices in vitro, 200

Viscoelasticity
dynamic, of human aortic valve tissue, 209

Visscher, Maurice B.
tribute to, 295

Voltage clamp
double sucrose gap technique, in tension-voltage determinations on atrial muscle (frog), 106
extracellular, effects on automaticity in depolarized myocardium (guinea pig), 751

Volume
expansion, effects on renin-aldosterone responses to prostaglandin A_1 , 574
homeostasis, assessment, in head-out water immersion (man), 619
loading, baroreflex responses to venous infusion (rabbit), 766
overload, effect on heart size, 301
stroke, beat-to-beat, continuous determination from aortic pressure pulses, 15
tissue, of coronary artery, in myocardial tissue recruitment (dog), 276

Volume-flow
distal to stenoses in thoracic aorta, measurement of (dog), 112

W

Wall stress
coronary artery, $^{35}\text{SO}_4$ incorporation into glycosaminoglycans as index of (dog), 828
focal, biochemical index of (dog), 828

Wall thickness
in study of heart size, 299

Water
renal handling, in head-out water immersion, 619

Water immersion
head-out, cardiovascular and renal effects, application of model in assessment of volume homeostasis (man), 619

Weightlessness
water immersion as an analog of, 619

X

Xenon
clearance studies, cerebral blood flow autoregulation in renovascular hypertension (baboon), 555

